PB86-172459

Superfund Record of Decision (EPA Region 2)
Helen Kramer Landfill, Mantua
Township, New Jersey September 1985

(U.S.) Environmental Protection Agency
Washington, DC

27 Sep 85

U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R02-85/020
September 1985

PB86-172459

EPA

Superfund Record of Decision:

Helen Kramer, NJ

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16. ABSTRACT
The Helen Kramer Landfill is located in Mantua Township, Gloucester County, New Jersey. The site encompasses a 66-acre refuse area and an 11-acre stressed area between the refuse and Edwards Run which is located immediately east of the landfill. The Helen Kramer Landfill site was originally operated as a sand and gravel pit. The site became an operating landfill between 1963 and 1965, during which time landfilling occurred simultaneously with sand excavation. In 1963, large volumes of wastes were deposited just north of the south ravine. Ponds of standing liquid were also located around the north ravine. Between 1963 and 1965, the fill was extended into the south ravine, and the north ravine was filled and graded. Very little is known about the landfill activities between 1965 and 1970. Throughout 1970 to 1981 it was alleged by area residents that sporadic chemical dumping continued. The New Jersey Department of Environmental Protection files and other reports indicate that materials containing hazardous substances were disposed of at the landfill during this period. Sampling conducted during the RI showed that the underlying aquifer is heavily contaminated with organic compounds including trichloroethanes, benzene, toluene, and phenols. Inorganic chemicals found in the ground water include arsenic, iron, and magnesium. The aquifer is discharging into Edwards Run which is also heavily contaminated with similar organics and inorganics.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Helen Kramer Landfill, NJ Contaminated Media: air, gw, soil, sw, wetlands Key contaminants: arsenic, inorganics, organics, phenols, toluene		

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HELEN KRAMER LANDFILL, NJ
(Continued)

The cost-effective remedial actions selected for this site include: construction of a ground water leachate collection trench, a clay cap, upgradient slurry wall, active gas collection and treatment system, and a security fence; dewatering, excavation, and filling of the leachate ponds and lagoons; implementation of surface water controls; a monitoring program; and collection and treatment of ground water/leachate from the trench (treatment preference is pretreatment and discharge to the POTW). The estimated capital cost for this remedy with pretreatment of the ground water/leachate is $36,478,000 and with complete onsite treatment is $38,089,000. O&M costs vary over the 30-year life of the remedy. First year O&M costs are projected to be $1,047,900 for pretreatment and $792,100 for complete onsite treatment.

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

Site

Helen Kramer Landfill, Mantua Township, New Jersey

Documents Reviewed

I am basing my decision on the following documents describing the analysis of cost-effectiveness of Remedial Alternatives for the Helen Kramer Landfill site:

- Remedial Investigation Report and Feasibility Study of Alternatives, Helen Kramer Landfill, R.E. Wright Associates, July 1985
- Staff summaries and recommendations for remedial alternative selection
- Responsiveness Summary for the Helen Kramer site

Description of Selected Remedy

- Construction of a groundwater/leachate collection trench
- Construction of a clay cap over the site
- Construction of an upgradient slurry wall
- Construction of an active gas collection and treatment system
- Dewatering, excavation, and filling of the leachate ponds and lagoons
- Construction of a security fence surrounding the site and work areas
- Implementation of surface water controls which are necessary to properly construct or implement and ensure the reliability of the other remedial components
- Implementation of a monitoring program to assess the effectiveness and reliability of the remedial action

- Collection and treatment of groundwater/leachate from the trench. The treatment preference for collected leachate is pretreatment and discharge to the POTW. Implementation is pending approval of the State of New Jersey and the local POTW. If such approval is not provided, complete treatment on-site will be implemented followed by discharge to local surface waters.

- Operation & Maintenance as required to ensure the continued effectiveness of the remedy.

Declarations

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300, and pursuant to EPA Delegation Manual Order 14-5, I have determined that the remedy described above is the cost-effective remedial action alternative for the Helen Kramer Landfill site.

It is hereby determined that implementation of this remedial action is the lowest cost alternative that is technologically feasible and reliable, and which effectively mitigates and minimizes damages to and provides adequate protection of public health, welfare and the environment. It is also hereby determined that the selected remedy is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

The State of New Jersey has been consulted and agrees with the selected remedy.

September 27, 1985
Date

Christopher J. Daggett
Christopher J. Daggett
Regional Administrator

Helen Kramer Landfill Site
Summary of Remedial Alternative Selection

SITE LOCATION AND DESCRIPTION

The Helen Kramer Landfill is located in Mantua Township, Gloucester County, New Jersey, approximately five miles south of Woodbury, New Jersey. The approximate latitude and longitude of the site are 39° 36' 45" north and 75° 12' 15" west, respectively (see Figure 1-1). The site is bounded on the north by Jessups Mill Road, the east by Edwards Run, the south by Boody Mill Road, and the west by Leave Road. The site encompasses a 66-acre refuse area and an 11-acre stressed area between the refuse and Edwards Run.

Centre City, the nearest residential community, is 1,200 feet east of the site. The Town of Mantua is 1.4 miles northeast of the site.

The landfill is dominated by a major north-south ridge approximately 1,500 feet in length with greater than 100-foot relief (see Figure 1-2). In the southern portion of the site, the ridge turns to the southeast and maintains an elevation of 80 to 90 feet above Edwards Run for a distance of about 600 feet. The ridge is characterized by randomly placed, uncompacted, and uncovered refuse, with numerous longitudinal settlement cracks which vent methane and steam.

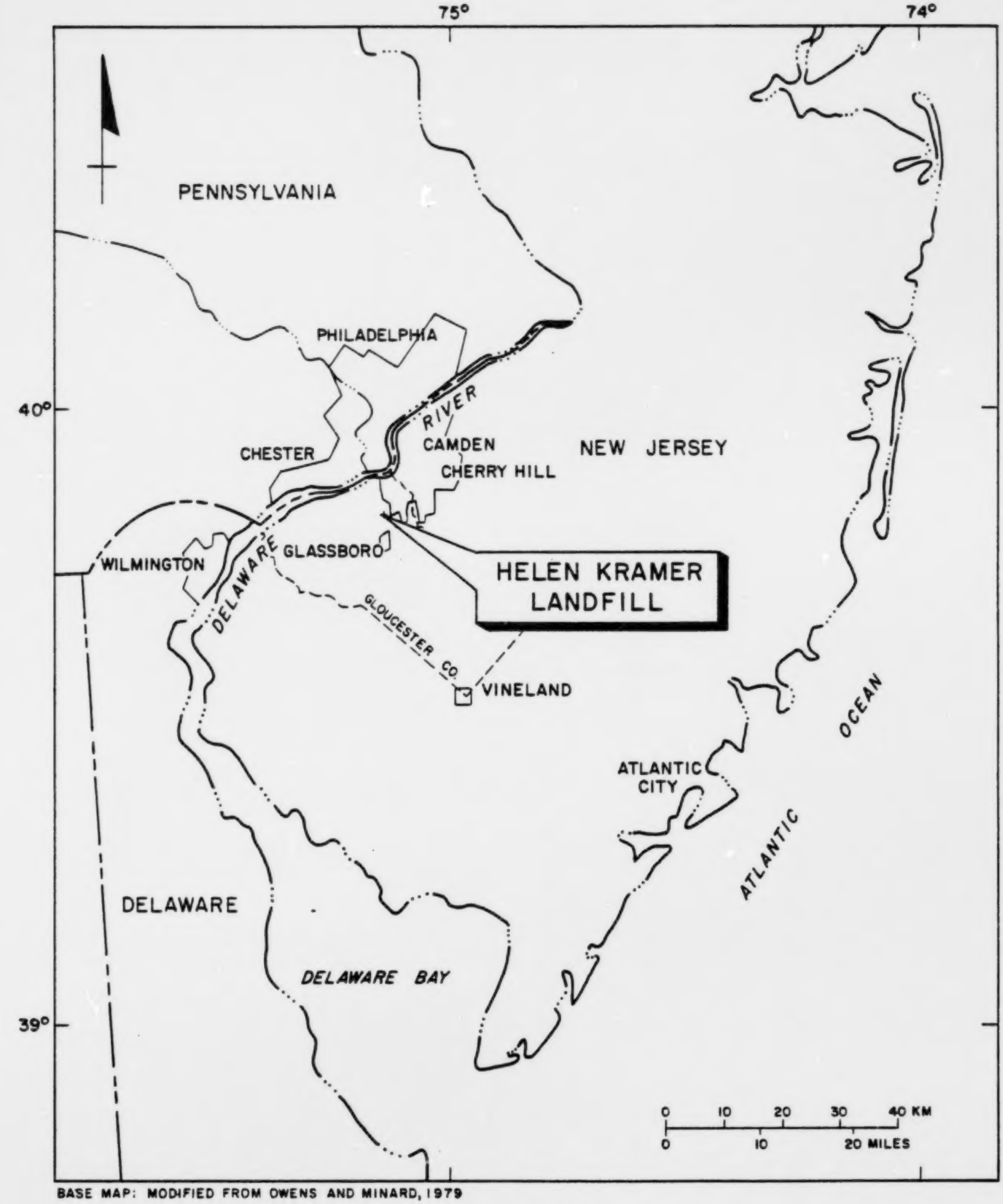
The western side of the landfill is moderately sloped with surface grades averaging less than 5 percent and rarely exceeding 10 percent. Leave Road is an access road which parallels the western boundary of the refuse zone.

The western boundary of the site is formed by a row of trees and brush and an open trench, approximately 2 feet deep, constructed to "cut-off" gas migration.

The northern boundary of the landfill is the Kramer homestead and the north ravine. The north ravine contains two converging rivulets which emerge from the fill at its toe and combine on the floodplain of Edwards Run. Dead vegetation, iron staining, a dark brown foamy leachate, and foul odor are present in this area.

Edwards Run is located immediately east of the landfill in a relatively low-lying and well entrenched stream valley. Edwards Run essentially forms the eastern boundary of the landfill. Steep escarpments form both sides of the stream valley. Edwards Run was primarily used for recreation and irrigation. Hidden Acres Township Park lies along Edwards Run about 4000 feet downstream of the site. Edwards Run flows into Mantua Creek 2.8 miles downstream of the site. Mantua Creek is a tributary to the Delaware River.

-1-a



75°
74°
40°
39°
PENNSYLVANIA
PHILADELPHIA
CHESTER
CAMDEN
CHERRY HILL
NEW JERSEY
RIVER
DELAWARE
WILMINGTON
GLASSBORO
HELEN KRAMER LANDFILL
GLOUCESTER CO.
VINELAND
ATLANTIC CITY
ATLANTIC
OCEAN
DELAWARE
DELAWARE BAY
0 10 20 30 40 KM
0 10 20 MILES

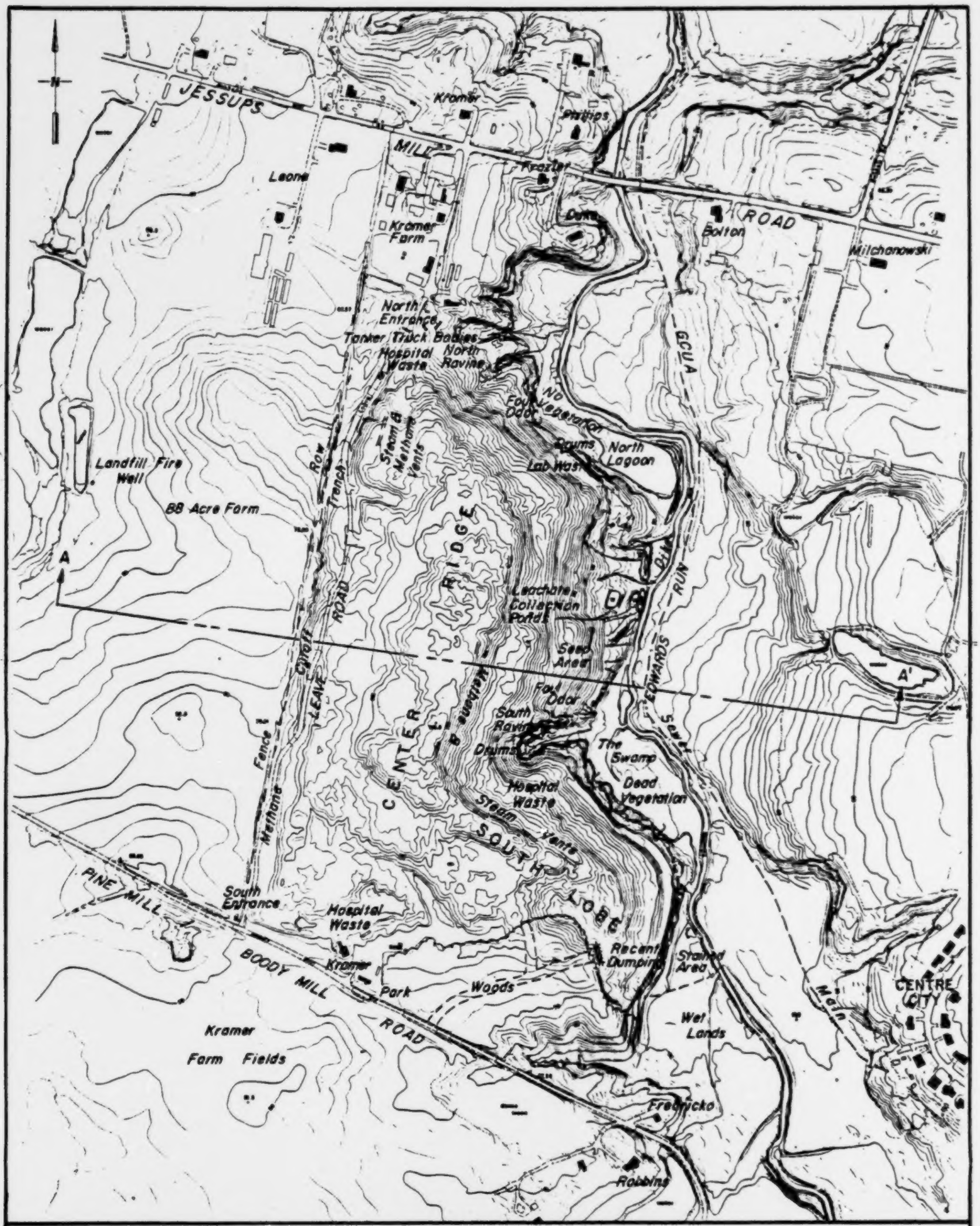
BASE MAP: MODIFIED FROM OWENS AND MINARD, 1979

FIGURE 1-1

LOCATION MAP

r. e. wright associates, inc.

-1-6


N
JESSUPS MILL ROAD
Kramer
Phillips
Frazier
Cole
Bolton
Milchanowski
Leone
Kramer Farm
North Entrance
Tanker Truck Bodies
Hospital Waste
North Ravine
Foul Odor
No Vegetation
Drums
North Lagoon
Lab Waste
Steam & Methane Vents
Row Trench
Landfill Fire Well
88 Acre Farm
A
CENTER RIDGE
Leachate Collection Ponds
Seep Area
Methane Vents
Ditch
Foul Odor
South Ravine
Drums
The Swamp
Dead Vegetation
Hospital Waste
Steam Vents
SOUTH LOBE
EDWARDS RUN
Methane Fence
LEAVE ROAD
Cullott Road
A'
PINE MILL
South Entrance
Hospital Waste
BOODY MILL ROAD
Kramer Park
Woods
Recent Dumping
Stained Area
Wet Lands
Main Street
CENTRE CITY
Kramer Farm Fields
Fredricko
Robbins

LEGEND

■ OCCUPIED DWELLING

A – – – A' SECTION LINE (See Figures 4-3, 4-7, & 4-8)

400' 0 400'
SCALE IN FEET

NUS-HELEN KRAMER
LANDFILL

SURFICIAL FEATURES

drawn DLB	approved SMS	drawing no.
checked KVL	date 5-15-85	FIGURE 1-2

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earth resources consultants
harrisburg pennsylvania

South of the north ravine, leachate emanates from several points along the landfill's eastern slope. The soil in the area of these leachate discharges exhibits a greenish to dark brown discoloration. The vegetation in this area is stressed.

The gradient of the northeast facing slopes of the landfill in this area is about 20 to 30 percent and has an elevation change of 70 feet.

A two to three-acre pond called the "north lagoon" contains from one to two million gallons of water and is located in the northeast corner of the site. Leachate from the landfill accumulates in this pond and is ultimately discharged through the pond's north end and bottom into Edwards Run.

The eastern slope of the landfill is long and steep. A 15 to 20 percent grade produces elevation changes along the slope of up to 100 feet. Numerous leachate seeps appear at various elevations along the base of the slope. Flow in these seeps may be a function of elevation since lower seeps exhibit greater flows. A man-made dike across the base of the landfill extends along Edwards Run from the north lagoon to about mid-site. This dike is contructed of sandy soil and has numerous breaches, through which leachate discharges to Edwards Run.

Two leachate collection ponds are located midway along the base of the eastern slope. These ponds were constructed in order to capture and recirculate leachate back onto the landfill. One pond is approximately two to three feet deep and is about 4,000 square feet in area. It is lined with a Hypalon membrane which is torn in numerous places. There is no apparent inlet to this pond from the site. South of the lined pond are numerous seeps which drain into an adjacent unlined pond of approximately 1,200 square feet in area. This smaller pond is formed behind the dike, but discharges to Edwards Run through a breach.

Numerous leachate seeps exist south of the leachate collection ponds along the edge of the fill for a distance of at least 500 feet. These seeps generally appear at elevation 30 feet mean sea level (msl) and drain into shallow gullies which flow across the sandy base of the eastern slope. These leachate flows generally discharge directly into a wetland to the east, although some of the flow re-percolates into the ground before entering the wetland.

The wetland (about three acres) is located east-southeast of the center of the landfill. It receives a large proportion of the leachate which migrates from the landfill. Vegetation is extremely stressed and the soil is stained by leachate. The wetland discharges primarily from its north end into Edwards Run approximately 200 feet south of the leachate collection ponds.

Further south along the eastern side is the south ravine. This feature is a topographic depression in the surface contour which intersects the center ridge at its bending point toward the south lobe. The south ravine exhibits steep natural sides sloped at greater than 50 percent. Prior to being landfilled, this gully was a major runoff swale. Today, flow persists in the ravine at typical discharge rates of 30 to 50 gallons per minute. Numerous leachate seeps enter the ravine from both sides. Leachate from the south ravine enters the wetland where it is combined with flows from other seeps. A few empty or crushed drums are in the south ravine, and buried drums are visible in the wall head of the ravine. The accessible drums were inspected and are empty. Much of the vegetation on these slopes is severely stressed.

The south lobe rises from the Edwards Run Valley very steeply with a natural slope of greater than 50 percent. The wetland forms the south lobe's northeastern boundary and Edwards Run skirts its southeast margin. Leachate seeps occur at the base of the slope and discharge directly into Edwards Run.

Off site to the southeast of the south lobe is a large wetland area. Some evidence of leachate staining was observed in this area along its border with the south lobe. However, the staining rapidly disappeared with distance from the landfill.

The southeastern border of the site is formed by a wooded area. Two dirt roads run through these woods, and recent refuse dumping has occurred at the ends of these access roads. Three house trailers (two occupied) are located south of the landfill off of Boody Mill Road. Boody Mill Road is an infrequently traveled dirt road which is essentially the southern border of the landfill, and is little used by anyone other than local residents.

SITE HISTORY

Waste Disposal and Enforcement

The Helen Kramer Landfill site was originally operated as a sand and gravel pit. The site became an operating landfill between 1963 and 1965, during which time landfilling occurred simultaneously with sand excavation. In 1963, large volumes of wastes were deposited just north of the south ravine. Ponds of standing liquid were then located around the north ravine. Between 1963 and 1965, the fill was extended into the south ravine, and the north ravine was filled and graded. Very little is known about Helen Kramer Landfill activities between 1965 and 1970.

In 1970, as a result of the enactment of the New Jersey Solid Waste Management Act, the site operator (Mr. Marvin Jonas) was issued a temporary 1-year registration by the NJDEP, and was given until July 1, 1971 to submit a sanitary landfill design required for permanent registration. Several months prior to the July 1, 1971 deadline, Mr. Jonas informed the NJDEP that operation of the landfill was the responsibility of Helen Kramer, owner of the property on which the landfill is located. The required landfill design was not submitted until July of 1973, and both it and subsequent revisions submitted in January and March of 1974 were determined to be incomplete by the NJDEP.

In October 1973, NJDEP inspections noted that trenches were being excavated and used for the disposal of chemical waste. A 20 by 6 foot area of chemical waste was noted, as was the disposal of septic waste into an active landfill face.

In January 1974, several inspections noted the presence of chemicals in a diked-off area and approximately 12 drums adjacent to these areas. Chemical waste disposal was evident in at least seven lagoons. Approximately 140 drums that may have contained scrap paint materials and other chemical wastes had been reportedly dumped into open trenches.

In April 1974, NJDEP personnel observed leachate discharging into Edwards Run from the landfill. Pursuant to this sighting, NJDEP issued a Departmental Order, a Notice of Prosecution, and Notice of Intent to Deny Renewal of Approved Registration for improper landfill operation and contamination of waters of the State. Also, in 1974, because of new regulatory authority, the NJDEP was able to specifically restrict the disposal of hazardous waste at the landfill. The NJDEP issued a stipulation against the landfill which limited it to the disposal of municipal refuse from households and commercial/ institutional establishments, sewage sludge, septic tank wastes, leaves, tree stumps, and branches.

A revised engineering design was submitted in November of 1974 and was again found to be deficient by NJDEP.

A second Notice of Prosecution was issued in September 1976 notifying Helen Kramer that her registration for landfill operation would be revoked within 90 days if an acceptable engineering design was not submitted to NJDEP within 30 days of the notice. The requested design was submitted, but was again rejected by NJDEP in April of 1977. At that time, a Notice of Registration Revocation was issued, thereby informing the owner to cease operation of the landfill.

Hearings on the revocation of the landfill registration continued until early 1981. On March 3, 1981, a Gloucester County Court ordered the landfill to cease operation effective March 7, 1981. The premise for the court-ordered closure was that the landfill had exceeded its permitted elevations and capacity.

Throughout the period from 1974 to 1981 it was alleged by area residents that sporadic chemical dumping continued. NJDEP files and other reports indicate materials containing hazardous substances were also disposed of at the landfill during that period.

Previous Response and Investigation Activities

During the summer and fall of 1981, several fires broke out at the landfill. The NJDEP with the assistance of the local fire department took action and extinguished all fires by November 1981.

From 1974 to 1983, the Helen Kramer Landfill has been the subject of numerous investigations and studies by local health authorities, the NJDEP, EPA and its consultants, and by Wehran Engineering Corporation (consultants for Helen Kramer). However, all of these investigations and studies were limited in their scope.

The results of the previous studies have determined:

- The Mt. Laurel/Wenonah Aquifer flowed from west to east under the site.

- The Mt. Laurel/Wenonah was contaminated with organic and inorganic pollutants in the area between the landfill and Edwards Run.

- No residential wells were found to be impacted by the landfill, except for one shallow well located within 20 feet of the refuse. This well was closed by the Gloucester County Health Department.

- Edwards Run was contaminated with organic and inorganic pollutants. Bioassay and Ames testing indicated Edwards Run was both toxic to the test species (bioassay) and mutagenic according to the ames test.

- Volatile organic compounds were found in the ambient air on and near the site. The concentrations did not indicate any imminent threat to nearby residents.

- Landfill gas, primarily methane, was detected migrating to the west in the unsaturated zone of the soil. No residential dwellings were found to be impacted.

ENFORCEMENT

In June of 1981 and January of 1982, EPA sent out Information Request letters pursuant to Section 3007 of RCRA, 42 U.S.C. §6927, to eleven (11) Potentially Responsible Parties (PRPs). The PRPs included the owner (Mrs. Helen Kramer), as well as several generators and transporters. The PRPs responded that either they did not send hazardous waste to the Helen Kramer Landfill or that waste was sent to the site without their (generators) knowledge and/or authorization.

Notice Letters to conduct the RI/FS were sent to eight (8) PRPs on March 16, 1983. No PRPs responded to the notice letters.

Notice Letters offering the opportunity to conduct the remedial design and implementation of the proposed remedial action were sent on September 6, 1985.

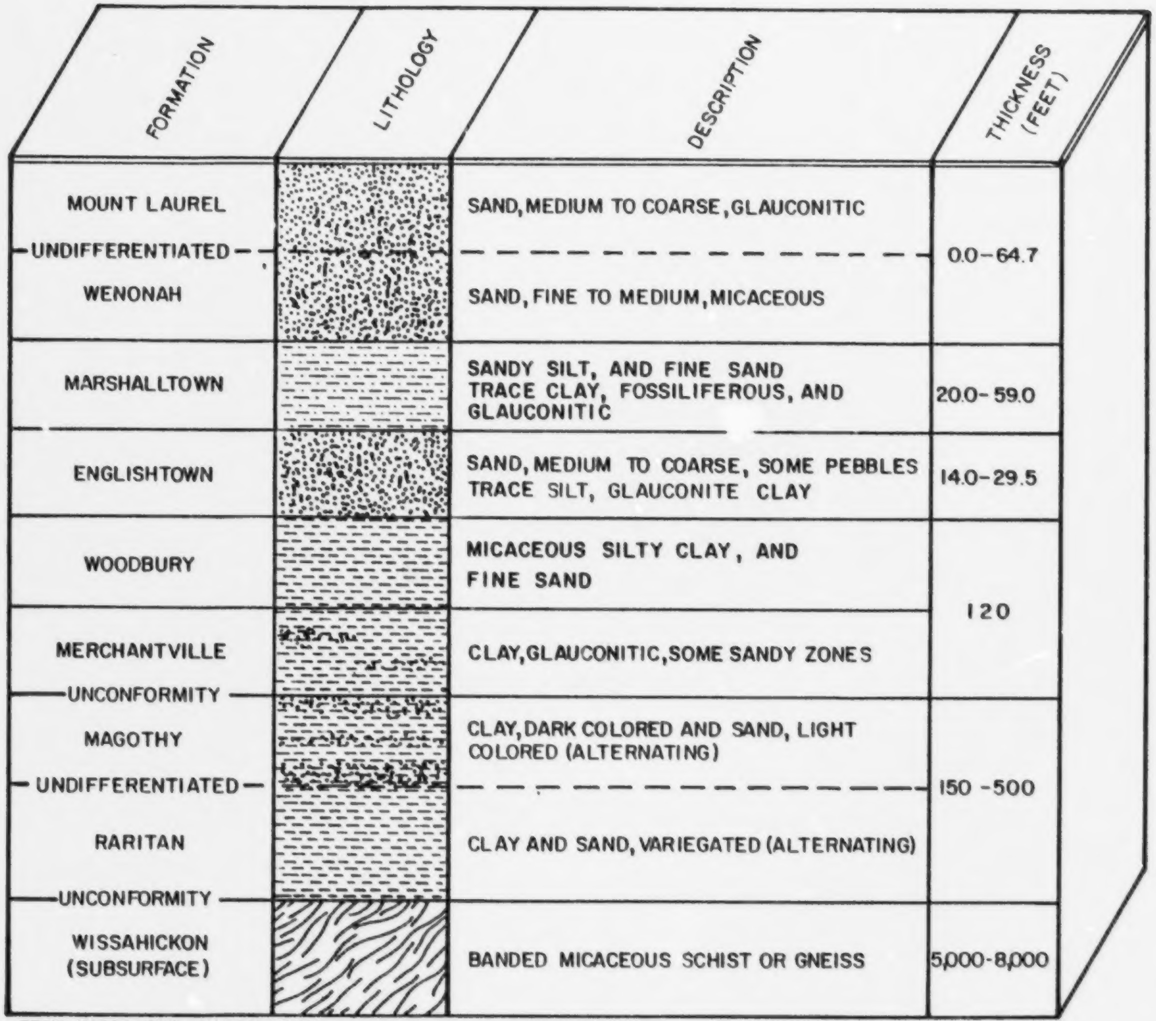
SITE GEOLOGY

Gloucester County, New Jersey, lies within the Coastal Plain physiographic province of the Eastern United States. The area is underlain by unconsolidated layers of sands and clays deposited in a relatively extensive horizontal sequence with a gentle southeastern dip.

The unconsolidated formations underlying the Kramer Landfill, from the surface down, are; Mount Laurel/Wenonah, Marshalltown, Englishtown, Woodbury, Merchantville, Magothy/Raritan. The Edwards Run stream valley also contains recently deposited alluvium (see Figure 4-1).

The Helen Kramer Landfill and adjacent areas are located within an outcrop of the Mount Laurel Sand and Wenonah Formation, which are mapped as a single undifferentiated geologic unit in Gloucester County due to their similar lithology (Hardt and Hilton, 1969). Hereafter, the Mount Laurel/Wenonah will be referred to as the Mount Laurel. The upper Mount Laurel Sand consists of light-gray to tan, medium to coarse-grained quartz sand with glauconite.

The Mount Laurel ranges in thickness from 0 to 65 feet in the immediate area of the site (see Figure 4-3). An ancient Edwards Run removed Mount Laurel Sand to form the valley in which the stream now resides. The quarrying and landfilling operations stripped away an unknown quantity of the Mount



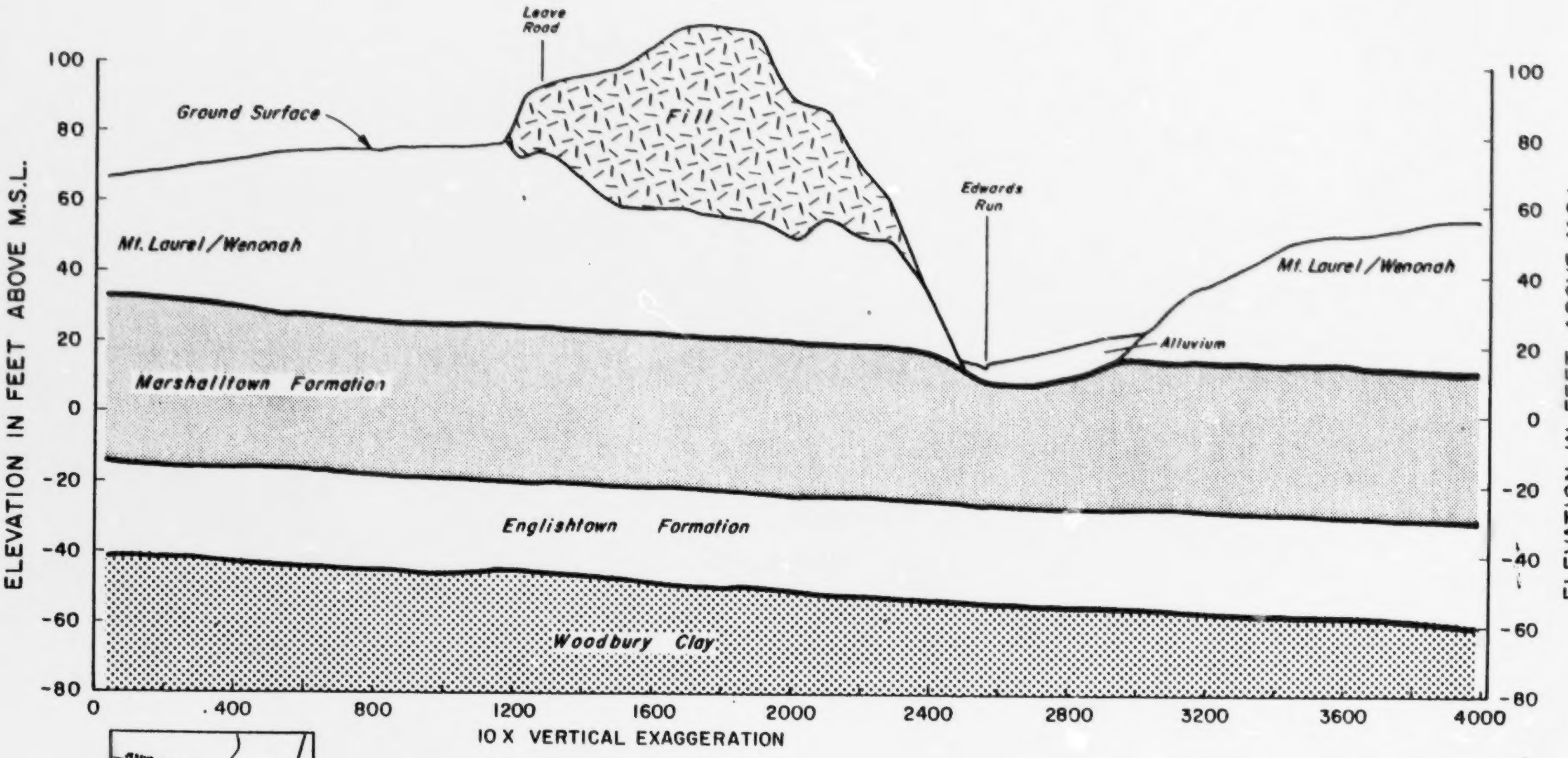
FORMATION	LITHOLOGY	DESCRIPTION	THICKNESS (FEET)
MOUNT LAUREL		SAND, MEDIUM TO COARSE, GLAUCONITIC	0.0-64.7
— UNDIFFERENTIATED —			
WENONAH		SAND, FINE TO MEDIUM, MICACEOUS	
MARSHALLTOWN		SANDY SILT, AND FINE SAND TRACE CLAY, FOSSILIFEROUS, AND GLAUCONITIC	20.0-59.0
ENGLISHTOWN		SAND, MEDIUM TO COARSE, SOME PEBBLES TRACE SILT, GLAUCONITE CLAY	14.0-29.5
WOODBURY		MICACEOUS SILTY CLAY, AND FINE SAND	120
MERCHANTVILLE		CLAY, GLAUCONITIC, SOME SANDY ZONES	
— UNCONFORMITY —			
MAGOTHY		CLAY, DARK COLORED AND SAND, LIGHT COLORED (ALTERNATING)	150 -500
— UNDIFFERENTIATED —			
RARITAN		CLAY AND SAND, VARIEGATED (ALTERNATING)	
— UNCONFORMITY —			
WISSAHICKON (SUBSURFACE)		BANDED MICACEOUS SCHIST OR GNEISS	5,000-8,000

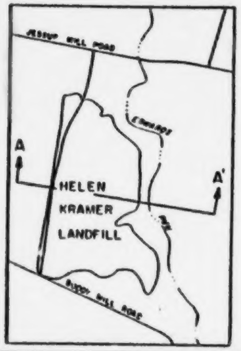
FROM HARDT AND HILTON, 1969

FIGURE 4-1

SITE SPECIFIC STRATIGRAPHIC COLUMN
HELEN KRAMER LANDFILL, MANTUA TWP., NJ.

-6-b


ELEVATION IN FEET ABOVE M.S.L.
100
80
60
40
20
0
-20
-40
-60
-80
Leave Road
Ground Surface
Fill
Edwards Run
Mt. Laurel/Wenonah
Alluvium
Marshalltown Formation
Englishtown Formation
Woodbury Clay
0
.400
800
1200
1600
2000
2400
2800
3200
3600
4000
10 X VERTICAL EXAGGERATION


JESSUP MILL ROAD
EDWARDS
A
A'
HELEN KRAMER LANDFILL

NUS-HELEN KRAMER
LANDFILL

CROSS SECTION

drawn RAM	approved SMS	drawing no. FIGURE 4-3
checked KVL	date 5-23-85	

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earth resources consultants
harrisburg pennsylvania

Laurel prior to disposal activities. The recent Edwards Run alluvium is as much as 20 feet thick and is deposited in the cut eroded through the Mount Laurel/Wenonah and partially into the top of the Marshalltown.

The Marshalltown Formation underlies the Mount Laurel, and is reported in the literature (Hardt and Hilton, 1969; Owens, 1969) to have a thickness of approximately 20 feet. A 20 to 55 foot thick unit was encountered in this investigation and termed Marshalltown. The Marshalltown in the study area is composed of medium to dark olive-gray fossiliferous and micaceous very fine silty sand and sandy to clayey silt. Six sub-units (members) of the Marshalltown were observed and correlated under the site. These units in pairs composed three distinct upward-coarsening sequences which varied from silty sand or sandy silt containing clay in the basal member to silty sand with traces of gravel in the top member. Each boring encountered an average total of 15 feet of strata containing clayey material in the Marshalltown. The Marshalltown Formation is interpreted as continuous under the entire site and serves as a leaky confining layer between the Mount Laurel and the underlying Englishtown Formations.

The Englishtown Formation is a fine to coarse-grained quartzose, sometimes massive cross-stratified sand unit with localized thin tongues of silt in the southeast portion of the study area. It is interpreted as being continuous under the site, ranges in thickness between 15 and 30 feet, and exhibits a moderate to high permeability.

The Englishtown Formation is underlain by the relatively impermeable Woodbury Clay and Merchantville Formations (combined thickness of approximately 120 feet) which create an effective barrier between the Englishtown and the Magothy and Raritan Formations. Due to this barrier the Magothy and Raritan Formations are not considered to be impacted by the site and therefore were not extensively studied.

The Remedial Investigation concentrated on the Mount Laurel and Englishtown Aquifers. The Mount Laurel Aquifer flows east under the landfill and discharges to Edwards Run. Since Edwards Run is a groundwater barrier to the Mount Laurel, the groundwater (Mount Laurel) on the east side of Edwards Run flows west and also discharges to the run. The coefficient of permeability ranges from 9×10^{-4} to 2×10^{-2} cm/sec. The groundwater flow in the Mount Laurel/Wenonah through the site area and discharging to Edwards Run is approximately 80,000 gallons per day (gpd) or 55 gallons per minute (gpm).

No monitoring wells were screened in the Marshalltown formation since it is not used as a water supply source. The coefficient of permeability tends to decrease with depth and ranges from 1.92 $X10^{-4}$ to $1.33x10^{-7}$ cm/sec with values of $5X10^{-7}$ cm/sec or less in more than half of the samples.

Due to the piezometric heads in the Mount Laurel and the Englishtown, the vertical leakage from the Mount Laurel through the Marshalltown into the Englishtown under the site is estimated to be 10,000 gpd (7 gpm). In the area of Edwards Run, the piezometric head of the Englishtown is greater than that of the Mount Laurel or Edwards Run. Therefore, vertical leakage is up from the Englishtown through the Marshalltown into the Edwards Run stream valley at an estimated rate of 19,000 gpd (13 gpm)(see Figure 4-9).

The Englishtown Formation is a confined aquifer whose piezometric surface is approximately 10 ft. above the top of the Marshalltown. The Englishtown flows east under the landfill and beyond Edwards Run. Because the Englishtown is confined it appears unaffected by Edwards Run. The hydraulic gradient across the site area and Edwards Run appears constant and the coefficient of permeability ranges from 1.18 x 10^{-2} to $4.22x10^{-3}$ cm/sec. The flow under the site area is approximately 101,000 gpd (70 gpm).

REMEDIAL INVESTIGATION ACTIVITIES AND RESULTS

Remedial Investigation Activities

The Remedial Investigation activities pertinent to the Remedial Investigation and Feasibility Study (RI/FS) are summarized in:

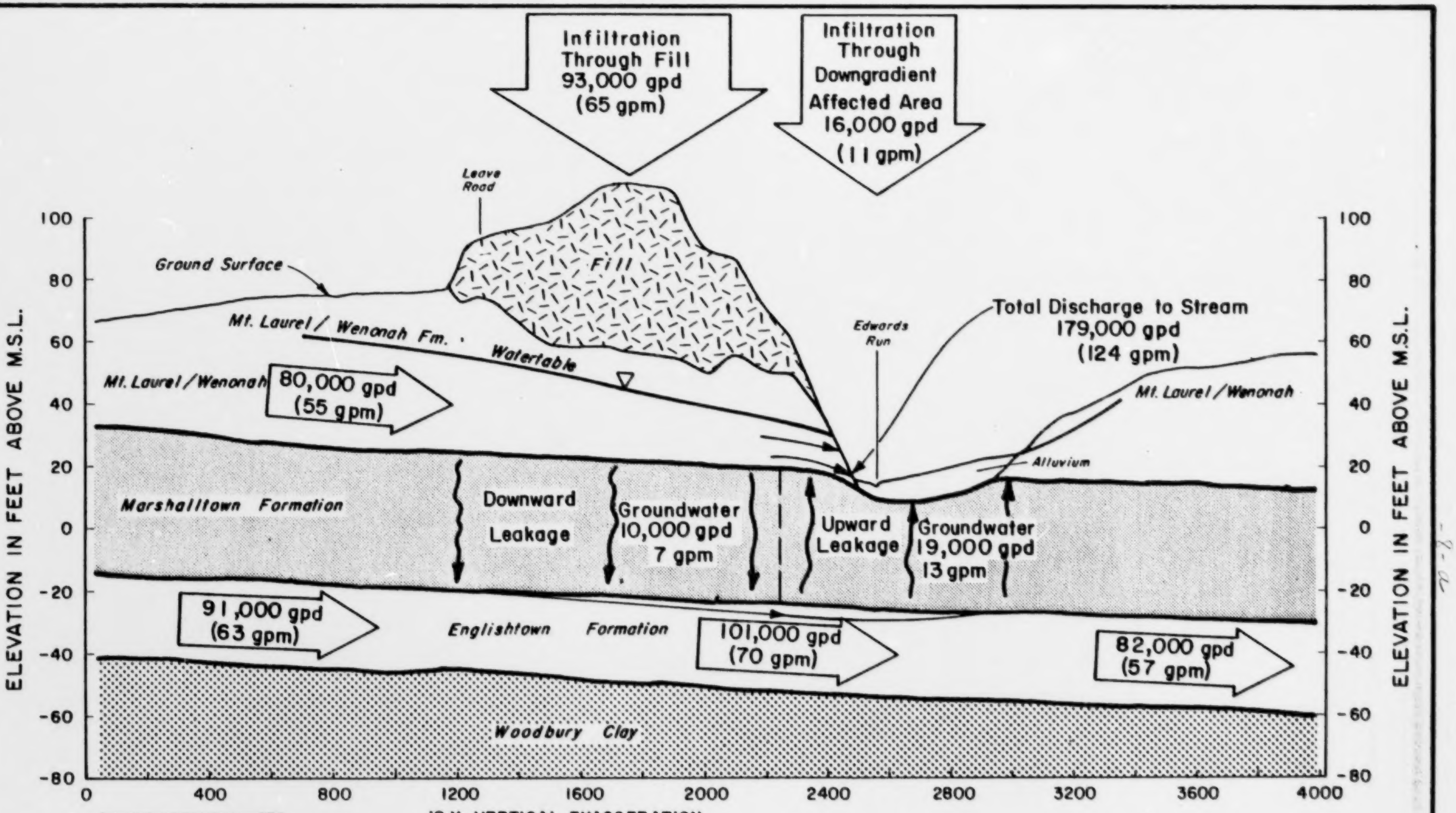
- Draft Remedial Investigation Report and Feasibility Study of Alternatives, Helen Kramer Landfill site, Mantua Township, Gloucester County, New Jersey, R.E. Wright Associates Inc., July 1985.

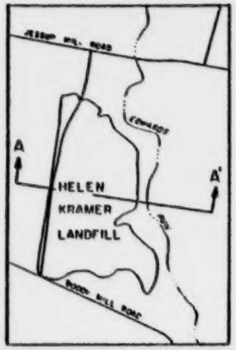
The major previous remedial investigation activities in the above report include:

- Air sampling, October 31 - November 2, 1983, by the NJDEP
- Bioassay and Ames testing. March and June 1981, and August 1984, USEPA Region II, Technical Support Branch

As part of the RI/FS, a Treatability Study to determine the effective treatment alternatives for the leachate has been conducted and is under review.

-8-a


Infiltration
Through Fill
93,000 gpd
(65 gpm)
Infiltration
Through
Downgradient
Affected Area
16,000 gpd
(11 gpm)
Leave Road
Fill
Ground Surface
Mt. Laurel / Wenonah Fm.
Watertable
Mt. Laurel / Wenonah
80,000 gpd
(55 gpm)
Edwards Run
Total Discharge to Stream
179,000 gpd
(124 gpm)
Mt. Laurel / Wenonah
Alluvium
Marshalltown Formation
Downward Leakage
Groundwater
10,000 gpd
7 gpm
Upward Leakage
Groundwater
19,000 gpd
13 gpm
91,000 gpd
(63 gpm)
Englishtown Formation
101,000 gpd
(70 gpm)
82,000 gpd
(57 gpm)
Woodbury Clay
ELEVATION IN FEET ABOVE M.S.L.
100
80
60
40
20
0
-20
-40
-60
-80
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
10 X VERTICAL EXAGGERATION


A
A'
HELEN
KRAMER
LANDFILL
EDWARDS

NUS-HELEN KRAMER LANDFILL

CONCEPTUAL WATER BUDGET

drawn RAM	approved SMS	drawing no.
checked KVL	date 5-23-85	FIGURE 4-9

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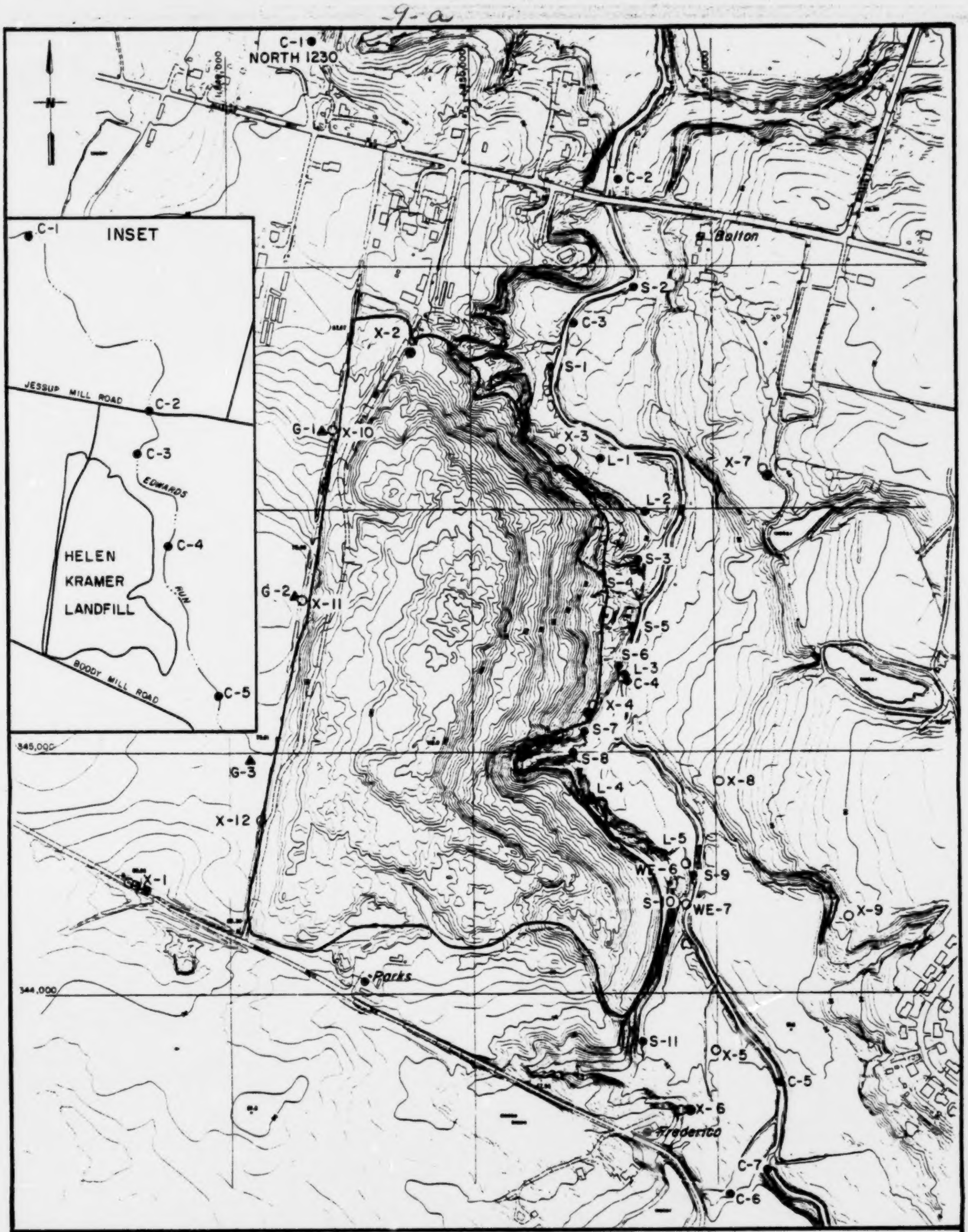
Results

The Remedial Investigation has determined that the Mount Laurel Aquifer is heavily contaminated (up to 400 mg/l total

volatile organics) with organic compounds including dichloro and trichloro-ethanes and ethenes, benzene, toluene, xylenes, ketones, and phenols. Inorganic chemicals found in high levels in the Mount Laurel include arsenic, cobalt, iron, magnesium, sodium, and calcium. Indicator parameters such as total organic carbon (TOC), total organic halides (TOX), and chemical oxygen demand (COD) were found at levels as high as 1200 milligrams per liter (mg/l), 65 mg/l, and 3900 mg/l, respectively. The groundwater analysis data are attached as Appendix I. All the sampling locations are shown in Figure 1-3.

As previously discussed, the Mount Laurel is discharging to Edwards Run. The approximate limit of the contamination in the Mount Laurel is shown in Figure 4-11. Although the Mount Laurel is used for domestic water supplies, because of the easterly flow only one well may potentially be affected. The owner maintains the well is not affected due to its depth. The owner stated only that the well was deep and refused to allow EPA's contractors to sample the well.

During the drilling of monitoring well X-4D (Englishtown well), gross organic vapors were found emanating from the drill cuttings of the Marshalltown Formation. Drill cuttings of the Marshalltown were collected and sent to a laboratory for organic chemical screening by gas chromatography. This screening showed organic contaminants had penetrated 40 feet of the Marshalltown at X-4 or to about 19 feet from the bottom of the formation. Based on the coefficients of permeability of the Marshalltown and the hydraulic gradient at X-4, the contaminated groundwater from the Mount Laurel should not have penetrated 40 feet of the Marshalltown, assuming the contaminants mobility is the same as water. Other factors, such as diffusion of contaminants, do effect the mobility of organic chemicals; therefore, assuming the contaminants mobility is the same as water may be an over-simplification. Research has shown that some organic chemicals do migrate faster than water through various strata. Another explanation for the organic contamination in the Marshalltown are the beds of higher permeability silty sands coupled with the conceptual vertical flows (Figure 4-7). Under this scenario, the contaminants may have entered the silty sand of the Marshalltown west of X-4 and migrated east horizontally and vertically down into the Marshalltown at X-4.


N
C-1
NORTH 1230
INSET
C-1
JESSUP MILL ROAD
C-2
C-3
EDWARDS
C-4
RUN
HELEN KRAMER LANDFILL
BOODY MILL ROAD
C-5
C-2
Bolton
S-2
C-3
X-2
S-1
G-1
X-10
X-3
L-1
X-7
L-2
S-3
S-4
G-2
X-11
S-5
S-6
L-3
C-4
X-4
345,000
S-7
S-8
G-3
L-4
X-8
X-12
L-5
WE-6
S-9
X-1
S-10
WE-7
X-9
Parks
344,000
S-11
X-5
C-5
X-6
Frederico
C-7
C-6

LEGEND

○	X-1	SHALLOW MT. LAUREL / WENONAH MONITORING WELL
◐	X-2	INTERMEDIATE MT. LAUREL / WENONAH MONITORING WELL
●	X-4	DEEP ENGLISHTOWN MONITORING WELL
●	Parks	MT. LAUREL / WENONAH RESIDENTIAL WELL
●	S-1	GROUNDWATER DISCHARGE SEEP
●	C-1, L-1	SURFACE SAMPLING LOCATIONS
▲	G-1	DEEP GAS BORING

400' 0 400'
SCALE IN FEET

NUS – HELEN KRAMER LANDFILL

REMEDIAL INVESTIGATION SAMPLING LOCATIONS

drawn RAM	approved SMS	drawing no.
checked KVL	date 5-9-85	FIGURE 1-3

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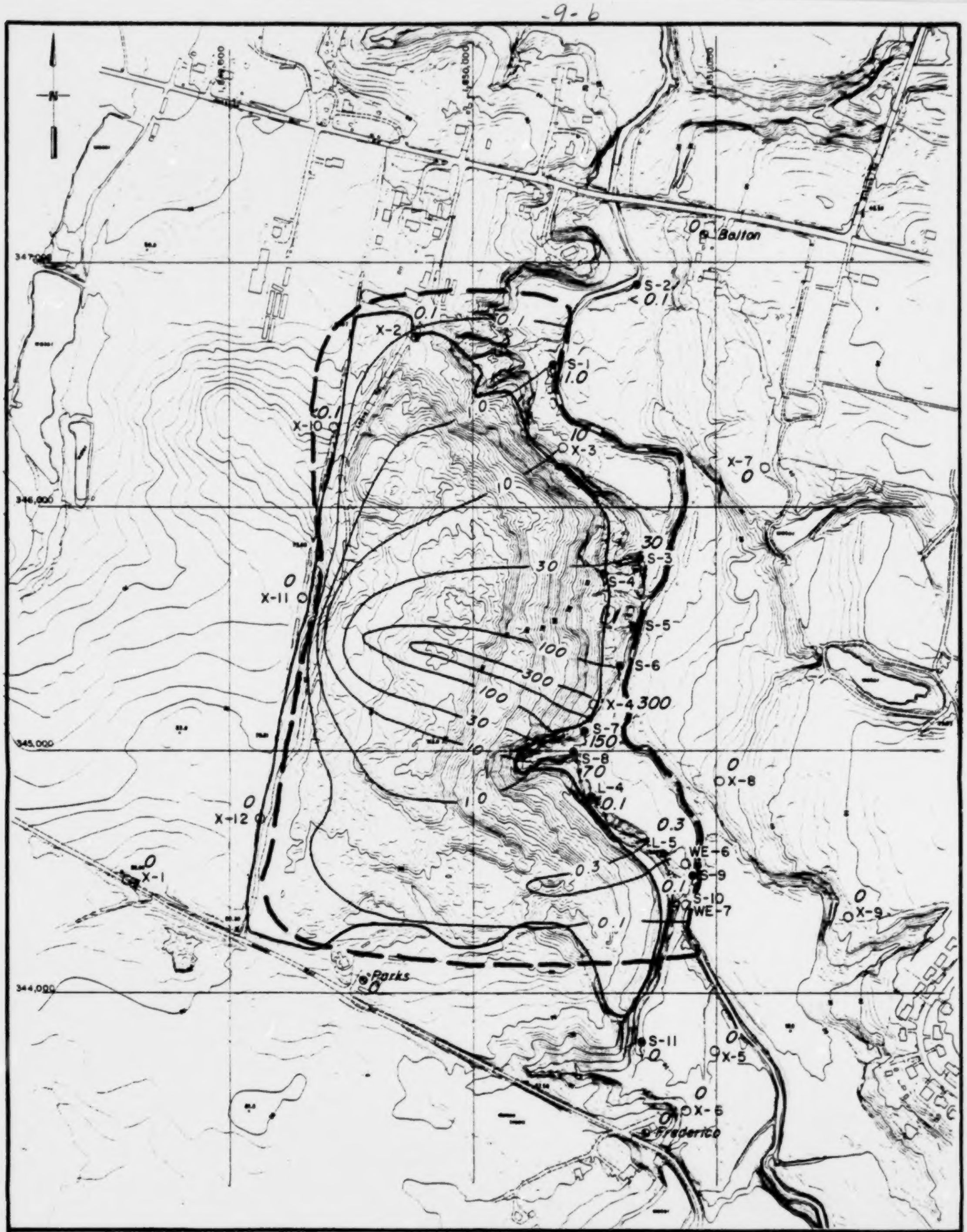
-9-6


N
1,649,500
1,650,000
1,651,000
347,000
346,000
345,000
344,000
0 Bolton
S-2 <0.1
X-2 0.1
0.1
S-1 1.0
1.0
X-10 0.1
10
X-3
X-7 0
10
0 X-11
30
30 S-3
S-4
S-5
100
S-6
300
100
X-4 300
30
S-7 150
10
S-8 70
0 X-8
1.0
L-4 0.1
0 X-12
0.3 L-5
WE-6
0.3
S-9
0.1
S-10
WE-7
0 X-9
0 X-1
0.1
Parks 0
S-11 0
0 X-5
0 X-6
Frederico

LEGEND

○ X-1	SHALLOW MT. LAUREL/WENONAH MONITORING WELL
◐ X-2	INTERMEDIATE MT. LAUREL/WENONAH MONITORING WELL
●— S-1	GROUNDWATER DISCHARGE SEEP
● Parks	MT. LAUREL/WENONAH RESIDENTIAL WELL
10	TOTAL ORGANICS (mg/l) IN GROUNDWATER
—10—	INFERRED ORGANIC ISOPAC
— — —	INFERRED LIMIT OF GROUNDWATER CONTAMINATION PLUME

400' 0 400'
SCALE IN FEET

NUS-HELEN KRAMER LANDFILL

SCHEMATIC OF DISTRIBUTION OF TOTAL ORGANIC CONTAMINANTS IN THE MT. LAUREL/WENONAH FM.

drawn DLB	approved SMS	drawing no.
checked KVL	date 5-13-85	FIGURE 4-11

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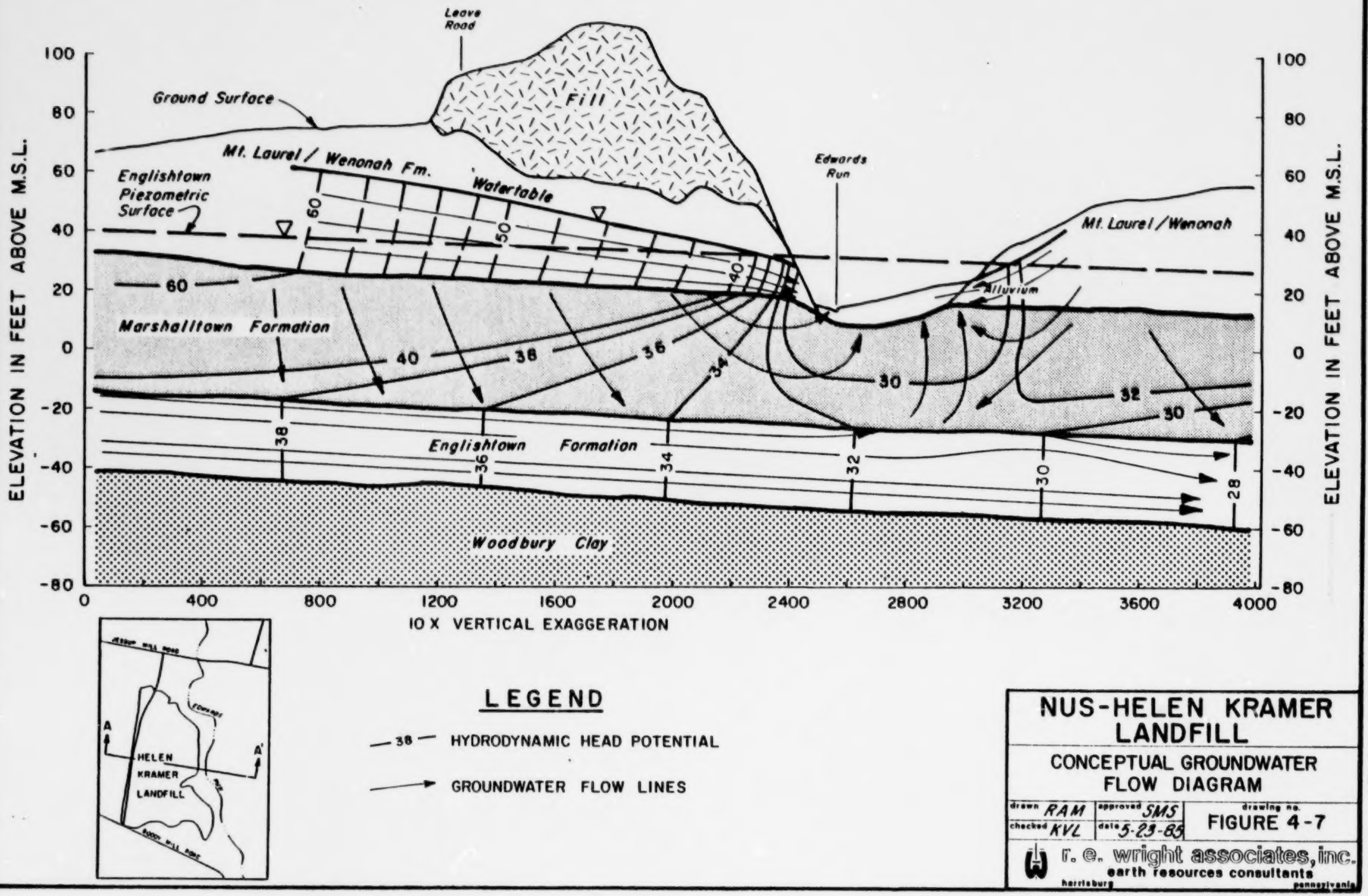
-9-C


Leave Road
Fill
Ground Surface
Mt. Laurel / Wenonah Fm.
Watertable
Englishtown Piezometric Surface
Edwards Run
Mt. Laurel / Wenonah
Alluvium
Marshalltown Formation
Englishtown Formation
Woodbury Clay
60
50
40
38
36
34
32
30
28
ELEVATION IN FEET ABOVE M.S.L.
100
80
60
40
20
0
-20
-40
-60
-80
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
10 X VERTICAL EXAGGERATION
A
A'
HELEN KRAMER LANDFILL
LEGEND
38 — HYDRODYNAMIC HEAD POTENTIAL
GROUNDWATER FLOW LINES

NUS-HELEN KRAMER LANDFILL

CONCEPTUAL GROUNDWATER FLOW DIAGRAM

drawn RAM
checked KVL
approved SMS
date 5-23-85
drawing no. FIGURE 4-7

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Two groundwater samples were collected on the same day from X-4D (Englishtown). Both samples showed trans-1,2,dichloroethene at 5.5 and 5.3 micro-grams per liter (ug/l). Two possible explanations for this observation were discussed in the report. One is that the analysis has detected the first signs of contaminant leakage through the Marshalltown. The second explanation is that cross-contamination from the Mount Laurel to the Englishtown may have occurred during drilling operations. No contaminants above background were detected in any of the other wells in the Englishtown. Due to the inconsistencies in the physical data and the different potential sources of the chemicals detected the report concludes that the data is insufficient to make any conclusions concerning the contamination of the Englishtown Aquifer. The data, regardless of the inconsistencies, does show a potential for the Englishtown to be contaminated.

The flow velocity in the Englishtown is estimated to be 0.5 feet per day. The Englishtown aquifer is used as a residential water supply (at least 2 homes) and possibly for irrigation within one half mile downgradient. Monitoring wells in the Englishtown located between the site and the residential wells did not show any contamination. Assuming contaminants are currently entering the Englishtown and based on the flow velocity, it would take 7 months to reach a downgradient monitoring well and over 4 years to reach the nearest residential well.

Edwards Run is also heavily contaminated with similar organics and inorganics found in the ground water, although at lower concentration due to dilution in the stream. Edwards Run is being contaminated by both surface leachate seeps and underground discharges. Previous bioassay and Ames testing of the leachate entering Edwards Run (1981) showed the leachate was both toxic and mutagenic respectively, to the test specimens. Bioassay and Ames testing in 1984 showed similar results.

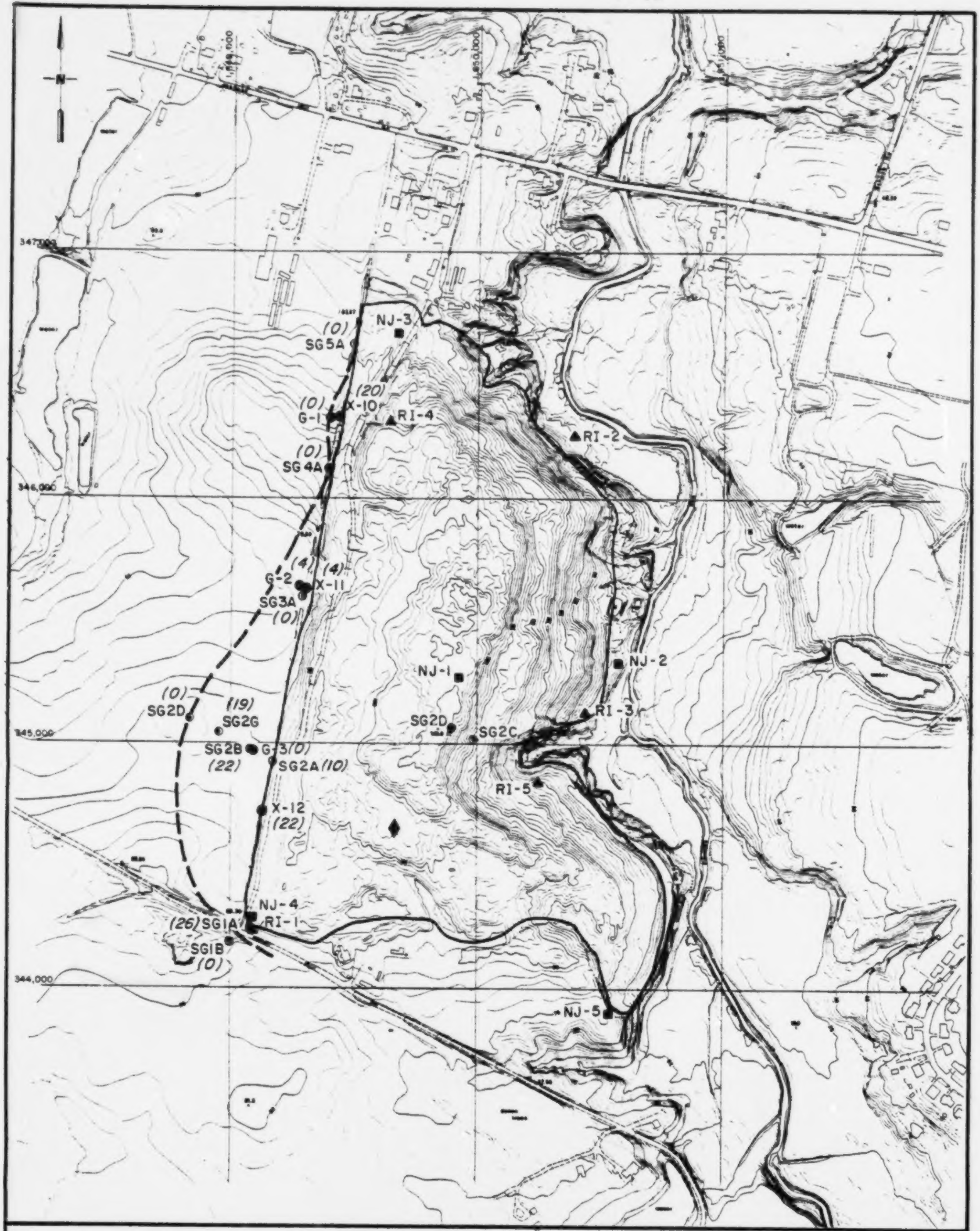
A three day, twenty-four hour air sampling program was conducted by the NJDEP from October 31 to September 2, 1983. The results showed significant concentrations of vinylidene chloride (1,1, dichloroethene), benzene, 1,2-dibromoethane, and toluene. As part of EPA's health and safety monitoring at the site, gross organic vapor analyses of the gases discharging from natural vents in the landfill showed sporadic levels of organic chemicals. The organic vapor concentrations ranged from 0 ppm to over 300 ppm during an attempt to drill through the landfill.

Landfill gas migration, primarily methane, was investigated using an organic vapor analyzer (OVA). This study indicated landfill gas is migrated in the unsaturated zone of the Mount Laurel formation about 200 feet to the west in the southern end of the landfill. Figure 6-1 shows the approximate extent of the gas migration. Landfill gases are also being discharged to the atmosphere through natural vents or cracks in the surface of the landfill. Methane concentrations at these vents were found at explosive levels at the vent openings, but the concentrations fell below explosive levels within a few feet from the vent.

The remedial investigation also noted several areas of exposed wastes with protruding sharp objects, steep slopes and rifts, as well as cracks in the surface. These conditions present physical hazards to anyone walking on the landfill.

Additional remedial investigations were concerned mainly with the surface leachate. In order to determine the amount of leachate being generated, several mathematical calculations together with direct observations were used. The results are graphically presented in Figure 4-9. The estimated average annual flow of leachate to Edwards Run is 124 gpm (179,000 gpd). Flow through the Mount Laurel is 55 gpm and infiltration from precipitation through the fill is 65 gpm. Infiltration through the area between Edwards Run and the fill is 11 gpm and leakage through the Marshalltown is 7 gpm. The average leachate/groundwater contaminant concentrations were estimated to be approximately 130 mg/l total organics with a TOC of 236 mg/l, COD of 326 mg/l and TOX of 8.2 mg/l. The average estimated concentrations of inorganics included arsenic 0.06 mg/l, chromium 5.4 mg/l (total), lead 0.197 mg/l, iron 300 mg/l and nickel 5.4 mg/l.

-11-a


N
347,000
346,000
345,000
344,000
(0)
NJ-3
SG5A
(20)
(0)
X-10
G-1
RI-4
RI-2
(0)
SG 4A
(4)
(4)
G-2
X-11
SG3A
(0)
NJ-1
NJ-2
(0)
SG2D
(19)
SG2G
SG2D
SG2C
RI-3
SG2B
(22)
G-3(0)
SG2A(10)
RI-5
X-12
(22)
NJ-4
(26) SG1A
RI-1
SG1B
(0)
NJ-5

LEGEND

● (20) X-11, G-1	DEEP GAS BORING AND PEAK METHANE CONCENTRATION
● SG1A	SHALLOW GAS BORING
▲ RI-1	1984 RI AIR MONITORING STUDY
■ NJ-5	1983 NJ DEP LANDFILL AIR MONITORING STUDY
◆	ABANDONED RI MONITORING WELL
— — —	INFERRED LIMIT OF METHANE MIGRATION

400' 0 400'
SCALE IN FEET

NUS-HELEN KRAMER
LANDFILL

LANDFILL GAS STUDY

drawn RAM	approved SMS	drawing no.
checked KVL	date 5-9-85	FIGURE 6-1

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RISK ASSESSMENT

To assist in determining the impact of the landfill on the public health and environment, a risk assessment was performed for the conditions at the site. Where possible, relevant standards were used to assess the impact of the site. In most cases no standards exist and relevant or applicable criteria and guidance must be used.

Relevant standards for air borne contaminants have been developed for the work place. The ambient measured or calculated concentration of air contaminants at the landfill do not exceed the workplace standards. For some compounds the work place Threshold Limit Value (TLV) has been used to develop a guidance level for non-workplace exposure. The concentrations of 1,1-Dichloroethene and toluene, at the site exceed these guidance levels. The potential increased cancer risk due to air-borne contaminants from the site is estimated to be in excess of $1X10^{-6}$ up to a distance of 5 miles from the site.

Several of the maximum observed concentrations of contaminants in Edwards Run also exceeded the water quality criteria for surface water developed pursuant to the Clean Water Act. For the inorganics, only nickel exceeds the guidance, and for the organics, 7 of 18 exceeded the guidance. These include chloroform, benzene, and several chlorinated ethenes. The potential increased cancer risk for ingestion of Edwards Run is estimated to be 3.5×10^{-3}.

The NJDEP has developed preliminary discharge criteria for the groundwater/leachate discharge from the site to Edwards Run. These criteria can be used to help determine what could be considered acceptable contaminant levels in the discharge. The average concentrations of contaminants in the discharge exceed twelve of the State's criteria, including benzene, arsenic, BOD, COD and TOC.

In general, the leachate entering Edwards Run is considered to have rendered the stream unusable for the designated uses of an FW-2 non-trout surface water.

SCREENING OF REMEDIAL ACTION TECHNOLOGIES

Table 11-1 summarizes the problems and potential exposure pathways identified during the remedial investigation. The goal of the remedial action at The Helen Kramer Landfill is to prevent or mitigate the migration of hazardous substances.

A comprehensive list of remedial technologies applicable to uncontrolled hazardous waste sites was evaluated. The screening procedure evaluated the technological applicability and constraints, the public health and environmental effects, institutional constraints, and order of magnitude costs. The results of the screening produced feasible remedial action technologies that then were combined into remedial alternative components.

REMEDIAL ALTERNATIVE COMPONENTS

Security Fence

Installation of a security fence would control access to the site and substantially reduce the hazard of direct contact with waste materials. The fence would be 6 foot high chain link and would surround the site.

Groundwater/Leachate Collection Trench

One method to prevent leachate from entering Edwards Run would be to install a groundwater/leachate collection trench along the entire eastern border of the site. A trench would be excavated down into the Marshalltown Formation. A perforated PVC pipe would then be placed in the trench to channel the leachate to a collection point. The trench could then be backfilled with gravel and sealed to prevent surface infiltration. The trench would be equipped with manholes for maintenance and lift pumps to remove the leachate. The pumps can also be used to maintain a leachate level in the trench that would minimize infiltration into the trench of clean surface water from Edwards Run. A downgradient slurry wall could also be installed to prevent the surface water from infiltrating into the trench. Another method, pumping wells, was considered but was eliminated because the aquifer characteristics prevent the wells from forming an effective cone of depression.

Upgradient Soil-Bentonite Slurry Wall

A means to mitigate the release of hazardous substances to Edwards Run and to mitigate the potential for contamination of the Englishtown aquifer is to install an upgradient slurry wall. The wall would substantially reduce the groundwater flowing under the site in the Mount Laurel formation from 55 gpm to approximately 4 gpm. Reducing the groundwater flow also reduces the piezometric surface of the Mount Laurel aquifer. This substantially reduces the potential for downward vertical migration through the Marshalltown into the Englishtown. The resulting flow reduction would also decrease the leachate quantities to be treated.

The slurry wall would be constructed on the west, north, and south sides of the landfill. The wall would be three feet thick and extend from the ground surface down to and keyed into the Marshalltown (about 60 feet on the west side). The wall would be placed about 15 feet outside of the existing waste deposition limit.

Surface Grading and Capping

Surface grading and capping would consist of filling areas of the site with local borrow and grading the soil to a maximum 20% slope. The cap will serve to prevent direct contact with the exposed waste, assist in gas emission control, eliminate the steep slopes and rifts, and most importantly reduce the amount of leachate generated by promoting runoff of precipitation, rather than percolation.

The reduction in percolation is dependent primarily on the material which composes the cap. Three capping technologies were evaluated, including: a RCRA cap composed of clay, synthetic liner, and soil; a clay cap composed of clay and soil; and a soil cap only.

The RCRA cap was eliminated in the initial screening for technical feasibility reasons. Recommended slopes for RCRA caps range from 3 to 5%. With slopes at the site of 20%, the material placed on the synthetic liner (drainage layer and topsoil) would have a high potential for slope failure, and therefore the RCRA cap was considered unreliable. In addition, the expected differential settling of the landfill could rip the liner and substantially reduce the effectiveness of the cap. Identifying and repairing these rips would be a significant maintenance problem.

Different capping materials were evaluated using EPA's HELP model. A clay cap would be expected to reduce percolation through the fill from 65 gpm currently to 0.5 gpm, a 99.2% reduction. The slopes are not expected to adversely affect the clay cap. Differential settlement would also affect the clay cap, but maintenance of the clay cap would not be as significant as the RCRA cap.

A soil cap would be expected to reduce percolation by 46% to 35 gpm. Maintenance from differential settlement would be less than both the RCRA and clay caps and would be significantly less in capital costs than the other two caps.

The clay cap would consist of a variable thickness of local borrow on the waste, one foot of gravel for gas venting, two feet of clay (10^{-7} cm/sec permeability), a one foot sand drainage layer, eighteen inches of local borrow and six inches of top soil. The cap is then vegetated to reduce erosion. A soil cap consists of the same material as the clay cap, except for the clay. In the alternatives that contain a groundwater/leachate collection system and/or an upgradient slurry wall, the cap is envisioned to extend from the refuse limit to the additional component.

Leachate Treatment

This remedial alternative component would be implemented in conjunction with the leachate collection trench. Once collected the leachate would require treatment prior to ultimate discharge to a surface water body. Several treatment technologies were evaluated. Based on the characteristics of the leachate, the following technologies were considered feasible for treatment of the leachate:

- Flow equalization- A basin designed to store peak flows which allow the treatment system to operate at a constant flow for more effective treatment, and for storage during maintenance shut-downs.
- Precipitation, Flocculation and Sedimentation- These technologies remove suspended solids and soluble heavy metals. It involves the addition of lime or caustic to raise the PH to about 8.0 to precipitate most of the heavy metals. Anionic polymers are then added to flocculate and agglomerate suspended solids. These processes are followed by sedimentation in a clarifier, to separate the precipitates from the waste water.
- Air stripping- The air stripping effectively removes volatile organic compounds from the leachate. This technique for removing these compounds was retained over activated carbon adsorption due to its lower cost with comparable, but less efficiency. The process involves passing air through a packed column of highly porous media and passing the leachate down the column, against the air flow. The volatile chemicals are stripped from the water and exhausted with the air. The air stripper may need additional treatment of the off-gas in order to comply with air pollution discharge criteria. If treatment is necessary it would involve vapor phase activated carbon to adsorb the volatile chemicals from the off-gas.

At this point in the treatment process, it may be possible to discharge the effluent from the air stripper to the Gloucester County Utilities Authority (GCUA) sewer system for final treatment at GCUA's activated sludge treatment plant.

If this pretreatment component is not implementable, either technically or institutionally, the treatment process would continue in order to obtain an effluent quality suitable for direct discharge to Edwards Run. This component will be the full treatment option and is expected to involve the following additional treatment methods:

- Activated sludge - Biological treatment could be used to remove a large portion of the remaining organic contaminants from the leachate. Activated sludge was chosen over other biological treatments due to its adaptability to fluctuating loadings. The basic activated sludge process involves degrading the organic contaminants with microorganisms. The system is aerated to provide oxygen for the process. The aeration tank is followed by a final clarifier to separate the sludge containing the microorganisms from the leachate (waste water). A portion of the sludge is then recirculated back to the aeration tank and the waste water continues in the treatment system.

- Filtration - the two part filtration process serves to "polish" the waste water to remove any residual suspended solids and organic chemicals. The first filter, a dual media filter, will remove any suspended solids not removed by the final clarifier primarily to prevent clogging in the second, activated carbon, filter. Preventing clogging in the carbon filter improves its effectiveness. The carbon filter would remove any trace organic chemicals remaining.

- Chlorination - This treatment step could be utlized to disinfect the waste water if necessary.

The Treatability Study currently under review will more specifically define the necessary treatment units.

Gas Generation/Migration and Treatment

In order to prevent off-site underground migration of landfill gas (primarily methane) and to control the release of landfill gas through the landfill surface, two types of gas controls were evaluated and retained. Gas control is also an integral part of the landfill cap. If uncontrolled, the pressure from the gas could cause cracks in the cap, adversely affect the integrity of a clay cap, and increase lateral migration off-site. The past fires at the site also indicate the need for gas control.

A passive gas ventilation system utilizes the gravel layer in the cap to channel the gas to the vents. Approximately 1,200 vents would be placed on a 50 square foot grid system. The vents would be 4 inch PVC pipes placed through the cap and perforated from the gravel layer down to the waste. The vents would extend to above ground level. The vents may have to be equipped with some type of treatment, depending on the concentrations and constituents of the gases being vented.

Active gas ventilation would utilize the gravel layer in the cap with 88 vents through the cap on a 200 foot grid. The vents would be perforated from the gravel layer down to the waste. The vents would be connected by a header pipe on the ground surface and be equipped with flexible joints to avoid breakage from differential settling. The header system would be connected to blowers, which would withdraw the gas and in turn force the gas into a gas treatment system.

The levels of gross organic vapors periodically found in the landfill gas indicate a strong potential for the gas to contain significant quantities of volatile organics. Based on other air analyses there is a potential for these volatile organics to cause offsite cancer risks greater than $1X10^{-6}$. The gas treatment system would consist of vapor phase carbon units to remove volatile organic chemicals, followed by methane flaring.

Although both systems allow for proper ventilation of the gases, the active gas system would provide the greatest assurance against the possibility of fires recurring at the site. Due to the methane hazard, an active gas ventilation system was recommended during construction of the cap. The short-term active gas system could then be easily integrated into the long-term system.

New Jersey Regulations require an active gas ventilation system when off-site migration of methane presents a problem. As a guide, the NJDEP considers that an off-site methane concentration greater than 25% of the lower explosive limit (LEL) would require an active gas collection system to be installed.

Excavation

Excavation is considered to be a very effective technology to mitigate the continued generation of leachate. The disadvantages of excavation at this site include: a significant safety hazard to the workers and the surrounding population, the lack of sufficient capacity in existing secure landfills for disposal of approximately 2 million cubic yards of waste, and the high cost of that disposal. This technology was, however, retained to be used in conjunction with the alternative to be developed to comply with EPA guidance concerning off-site treatment storage and disposal.

Construction of an On-Site RCRA Facility

This component involves construction of a secure hazardous waste landfill adjacent to the site that conforms to the regulations promulgated under the Resource Conservation and Recovery Act (RCRA). This RCRA landfill would serve as the disposal facility of the waste excavated. It would involve construction of three individual cells with double liners and RCRA caps.

A groundwater collection and treatment system would be installed to collect and treat the leachate during excavation, and remove any residual contamination from the soil after excavation. The treatment plant would then be available to treat any leachate that would be collected by the double liner system in the RCRA facility.

This component has an extremely high cost as well as significant safety problems associated with excavation.

Lagoon Dewatering and Excavation

This component involves remediation of the north lagoon and the two leachate collection ponds. The lagoons contain approximately 1.52 million gallons of leachate and an estimated 2400 yd^3 of highly contaminated soil/sediment. The soil would be placed on the landfill under the cap. The leachate would be disposed of at a nearby (<25 mi.) permitted treatment facility or recirculated through the fill and then collected and treated by the leachate collection trench and treatment system. The lagoon would then be filled with local borrow.

Surface Water Controls

The surface water controls are an integral part of the landfill cap. This component consists of storm water runoff controls, to protect the cap from erosion and promote runoff, and relocating approximately 600 feet of Edwards Run near the south lobe of the landfill.

The storm water runoff controls would involve a series of channels on the cap to direct the runoff to retention basins, which discharge to nearby surface waters. The retention basins store the water to allow for a controlled discharge which helps protect erosion at the receiving stream.

The relocation of Edwards Run is necessary in order to extend the cap out to achieve the desired slope. A 600 foot long portion of Edwards Run near the south lobe will be relocated by constructing a new stream channel about 100 feet east of the existing channel.

These controls utilize established construction technologies and are relatively easily implementable and reliable. Relocating Edwards Run would most likely require compliance with state stream encroachment regulations.

Alternate Water Supply

This component would essentially eliminate the low potential for residential wells to become contaminated. It involves either drilling new wells to the unthreatened Raritan Magothy Aquifer and/or extending municipal water supply mains from east Greenwich Township down Jessups Mill and Boody Mill Road into Mantua Township. The water mains currently extend to the township border adjacent to the site.

Monitoring

This component would involve quarterly monitoring of six existing and one new shallow wells, two existing and 4 new deep wells, two surface water locations, and air samples upwind, onsite, and downwind.

REMEDIAL ALTERNATIVES

The Remedial Alternative components were combined to form remedial action alternatives in five categories to comply with EPA guidance. Outlined below are the remedial alternatives developed for the cost-effective analysis.

Alternative #1 (No Action)

°Security Fence
°Monitoring

Alternative #2

°RCRA Landfill adjacent to site
°Excavation and Disposal in the On-Site RCRA Landfill
°Groundwater/Leachate Collection and Treatment
°Dewater, Excavate and Fill Lagoons
°Security Fence
°Monitoring

Alternative #3

- Clay Cap
- Groundwater/Leachate Collection Trench and Treatment
  - Pretreatment
  - Complete Treatment
- Passive Gas Ventilation
- Dewater, Excavate, and Fill Lagoons
- Surface Water Controls
- Security Fence
- Monitoring

Alternative #4

- Clay Cap
- Groundwater/Leachate Collection Trench and Treatment
  - Pretreatment
  - Complete Treatment
- Active Gas Ventilation
- Upgradient Slurry Wall
- Dewater, Excavate, and Fill Lagoons
- Surface Water Controls
- Security Fence
- Monitoring

Alternative #5A

- Clay Cap
- Passive Gas Ventilation
- Upgradient Slurry Wall
- Dewater, Excavate, and Fill Lagoons
- Surface Water Controls
- Security Fence
- Monitoring

Alternative #5B

- Soil Cap
- Groundwater/Leachate Collection Trench and Treatment
  - Pretreatment
  - Complete Treatment
- Upgradient Slurry Wall
- Passive Gas Ventilation
- Dewater, Excavate, and Fill Lagoons
- Surface Water Controls
- Security Fence
- Monitoring

Alternative #5C

- Clay Cap
- Passive Gas Ventilation
- Dewater, Excavate, and Fill Lagoons
- Surface Water Controls
- Security Fence
- Monitoring

Alternative #5D

°Soil Cap
°Groundwater/Leachate Collection Trench and Treatment
 - Pretreatment
 - Complete Treatment
°Passive Gas Ventilation
°Dewater, Excavate, and Fill Lagoons
°Surface Water Controls
°Security Fence
°Monitoring

Alternative #5E

°Alternate Water Supply

EVALUATION OF ALTERNATIVES

The National Oil and Hazardous Substances Contingency Plan (NCP) 40 CFR Part 300 Subpart F dictates a detailed evaluation of the alternatives.

The detailed analysis evaluates each alternative according to its:

- Performance (effectiveness), reliability and implementability
- Institutional Constraints/Issues
- Any Adverse Environmental or Health Effects
- Cost

Each alternative was evaluated and compared on the factors listed above. The evaluation is summarized below:

Alternative #1: This alternative would not be at all effective in preventing or mitigating the release of hazardous substances to the environment. The adverse risk to public health and the environment would continue and the violations of existing regulations, guidance, and criteria would continue. This Alternative is easily implementable and has the least estimated present worth cost of $1,271,000.

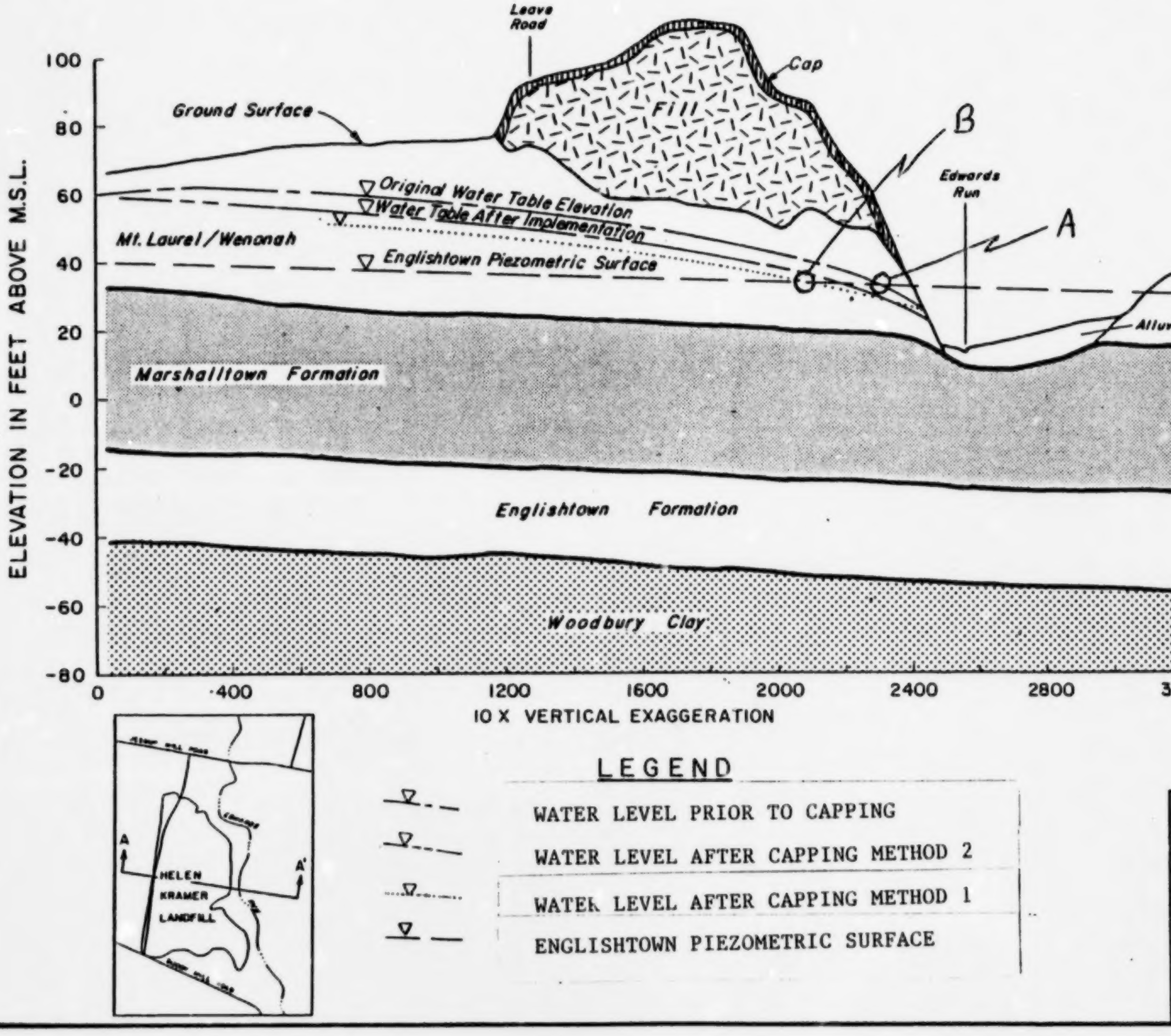
Alternative #2: This alternative has the greatest present worth cost at $137,309,000. It requires excavation of the entire landfill and the construction of a secure landfill (RCRA) adjacent to the site. The excavation of the landfill has severe potential adverse impacts to the workers on site and to the surrounding residents. The unknown location and nature of the material buried in the landfill would require extensive safety precautions. These precautions still may not prevent explosions or rapid releases of hazardous substances from contact by heavy equipment with drums or other containers containing explosive, flammable or reactive waste. Exposing more solid wastes during excavation would increase the uncontrolled release of landfill gases and would be expected to increase the risk to residents from air-borne contaminants.

A means to reduce the adverse impacts of excavation would be to limit the area of excavation so that any releases can be properly managed. Although this is implementable it substantially increases the time to implement the remedial action. The time to construct the secure landfill would also be extensive compared to the other alternatives, conservatively estimated at twice as long as the other alternatives. The institutional constraints of building a RCRA disposal facility in a residential area would be substantial and could add additional time for implementation. When fully implemented this alternative would provide the most effective remedy.

Alternative #3: This alternative involves a clay cap; groundwater/leachate collection and treatment; passive gas ventilation; along with lagoon remediation; surface water controls; security fence and monitoring.

This alternative would reduce the amount of leachate emanating from the site by 60%, from 124 gpm to approximately 50 gpm annualized flow. The groundwater/leachate collection trench substantially reduces the discharge of the leachate to Edwards Run to a negligible amount and almost eliminates the risk associated with ingestion and dermal contact with Edwards Run. These two components also substantially reduce the direct contact and vapor inhalation hazards posed by the exposed waste and leachate on the site. The clay cap and passive gas ventilation system would effectively control the release of landfill gases, but the elevated risks to nearby residents associated with the airborne release of these gases from the vents would not be mitigated. The subsurface migration of gases off-site would be expected to be eliminated.

With the installation of the clay cap, the piezometric head in the Mount Laurel would be lower in response to the lack of recharge through the site area. The water table would lower and is estimated to reach an equilibrium about 8.5 feet lower than its present stage. This would result in a reduction in the potential for contamination of the Englishtown Aquifer due to the decrease in the vertical hydraulic gradient. The clay cap's effect on the vertical gradient would not be sufficient to reverse the downward flow. The vertical flow gradient currently reverses at a point along the eastern edge of the site (Figure 1, Point A). At this point, the piezometric surface of the water table equals the piezometric surface of the Englishtown. This point is where the net vertical flow changes from down through the Marshalltown and into the Englishtown to up into the Marshalltown. The clay cap would only shift the point about 200 feet west, (point B) and thus would only slightly reduce the potential for contamination of the Englishtown.


Leave Road
Cap
Fill
Ground Surface
B
A
Edwards Run
Original Water Table Elevation
Water Table After Implementation
Englishtown Piezometric Surface
Mt. Laurel / Wenonah
Mt. Laurel / Wenonah
Alluvium
Marshalltown Formation
Englishtown Formation
Woodbury Clay
ELEVATION IN FEET ABOVE M.S.L.
ELEVATION IN FEET ABOVE M.S.L.
100
80
60
40
20
0
-20
-40
-60
-80
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
10 X VERTICAL EXAGGERATION
A
A'
HELEN KRAMER LANDFILL
LEGEND
WATER LEVEL PRIOR TO CAPPING
WATER LEVEL AFTER CAPPING METHOD 2
WATER LEVEL AFTER CAPPING METHOD 1
ENGLISHTOWN PIEZOMETRIC SURFACE

NUS-HELEN KRAMER LANDFILL

SCHEMATIC CROSS-SECTION SHOWING MT. LAUREL/WENONAH WATER TABLE BEFORE AND AFTER CAPPING

drawn DLB	approved SMS	drawing no. 1
checked SMS	date 7-25-85	

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The surface water controls are necessary for all the alternatives that have a cap (Alternatives 3,4,5A through D). Relocating Edwards Run is necessary in order to have space to construct the cap and trench. The other surface water controls reduce erosion and infiltration which subsequently improves the reliability and effectiveness as well as lowering the maintenance costs of the cap.

The security fence, applicable to all alternatives (except 5E), controls access and reduces the potential for vandalism and trespassing. This helps to keep maintenance costs down and reduces the risk of exposure to the gases concentrated from the passive gas vent system.

Monitoring is necessary for all the alternatives (except 5E) in order to determine the effectiveness of the remedial action and to help determine the long term reliability. Monitoring would also be an institutional requirement under federal and state regulations.

Dewatering, excavating, and filling the lagoons (lagoon remediation) is common to alternatives 3,4,5A through D. Dewatering the leachate collection ponds is a prerequisite to filling them in order to attain the slopes for the cap. Primarily because the north lagoon is not over and waste and for ease of construction of the cap and collection trench, the cap and trench are not envisioned to extend over the north lagoon. However, because of the high concentration of contaminants and the volume of material, the north lagoon is considered to present risks similar to that posed by the leachate and Edwards Run. Remediation of the north lagoon is considered essential to achieve the overall effectiveness of a source containment remedial action.

The potential adverse impacts associated with the implementation of Alternative 3 primarily deal with worker exposure during excavation of the collection trench. Proper safety precautions should eliminate these impacts. Another safety factor to be considered is the potential for igniting the methane being released through the cracks in the landfill. Heavy equipment needed for the installation of the cap, has the potential to be an ignition source for the methane. This potential hazard exists on the site currently from tresspassing vehicles and appears to be a risk that is inherent to capping any landfill. Safety precautions such as spark arresters and active gas collection during construction, can reduce, but not eliminate this potential.

The institutional constraints that may affect Alternative 3 include; state permit requirements for the treatment plant discharges, both air and water, and stream encroachment;

utilization of adjacent properties that are not part of the site, primarily for installation of the surface water controls and the security fence; not adhering to state regulation/ guidance for off-site methane migration; any local ordinances for construction projects.

As previously discussed, when off-site migration of methane is found above 25% of the LEL, an active gas collection system may be required under the state regulations. The NJDEP methane migration study of 1981 indicated off-site concentrations greater than 100% LEL. The methane migration study in the remedial investigation found levels approaching but not exceeding 25% LEL. The earlier study might be used in the State's determination on the applicability of the regulation. This alternative would not satisfy that requirement, if imposed. It is also anticipated that the passive gas venting system would have to conform to state air pollution discharge criteria.

The extent of groundwater treatment is independent of the other components of this alternative. The determination of which treatment system would be needed is dependent on the results of the Treatability Study and subsequent approval by the state and local authorities.

For this alternative the design flow, which is estimated based on a 1.3 factor of safety multiplication of the maximum estimated annualized flow (150 gpm), is 200 gpm initially, and 125 gpm after implementation. The 125 gpm is expected to continue for the 30 year design life of the alternative. The design flows were rounded up to the nearest 25 gpm for costing purposes.

The estimated present worth costs for this alternative are $35,975,000 for complete treatment and $35,875,000 for pretreatment.

Alternative #4: This alternative includes a clay cap; groundwater/leachate collection and treatment; active gas ventilation and treatment; an upgradient slurry wall; dewater, excavate and fill lagoons; surface water controls; security fence; and monitoring.

Alternative 4 differs from Alternatives 3 in that it includes an upgradient slurry wall and an active gas ventilation and treatment system. These components improve the overall effectiveness of the action by substantially reducing the amount of leachate generated and the release of landfill gases to the ambient air. Another difference is the clay cap is extended from the refuse limits to the slurry wall in order to make an effective containment system.

The upgradient slurry wall would accomplish two benefits. One is that it reduces the groundwater flow through the Mount Laurel from 55 gpm to 4 gpm. This reduction in flow along with the reduction in percolation from the clay cap would reduce the flow into the collection trench from 124 gpm (179,000 gpd) to about 15 gpm (21,500 gpd). This represents an 88% reduction in the leachate requiring treatment. The other benefit to the slurry wall, in combination with the clay cap, is that by lowering the water table under the site the vertical hydraulic gradient would reverse from down to the Englishtown to up to the Mount Laurel (see Figure 2). Other factors, aside from flow direction such as diffusion, effect contaminant migration. However, the flow direction is the predominant factor in contaminant migration. Reversing the flow would not absolutely eliminate the potential for contamination of the Englishtown, but it does provide the maximum reduction of the potential for contamination, except for complete excavation.

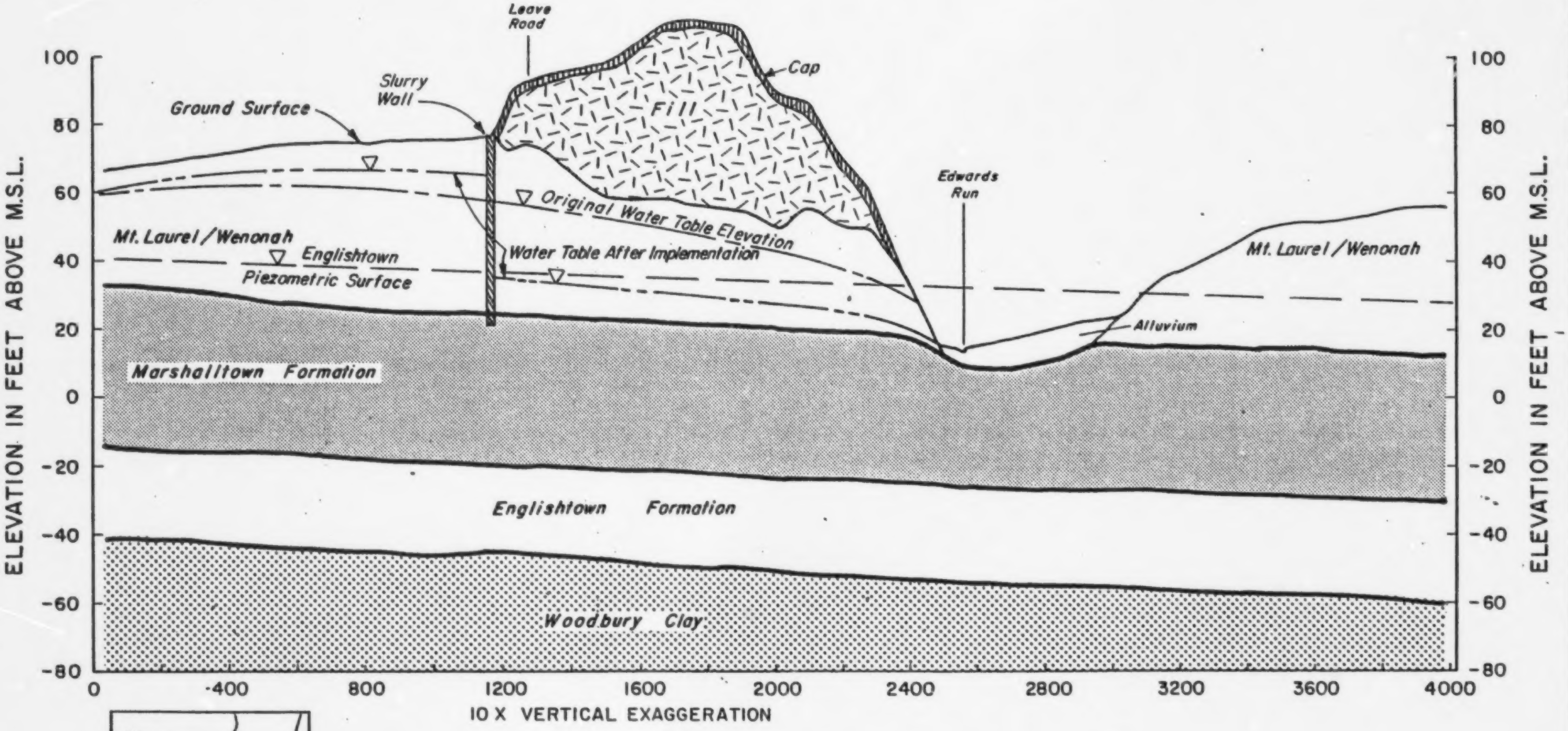
The active gas ventilation and treatment system is more effective in controlling the gas and reducing the hazards it poses than the passive system. The treatment of the gases would substantially reduces the risk to the residents from air borne contaminants over the passive system.

No adverse effects are anticipated during construction of the slurry wall or the active gas ventilation and treatment system. Proper safety precautions would be needed if a short term active gas system is utilized during construction of the cap. Adverse effects from the other components are the same as Alternative 3.

The institutional constraints are similar, except for the gas venting system, to Alternative 3, and are not expected to impede implementation of this Alternative. The state requirement for active gas collection would be satisfied under this Alternative.

The flow estimates used for costing purposes for this alternative were estimated to decrease exponentially with time. The initial design flow is estimated to be 200 gpm, then decreasing to 90 gpm the first year after implementation and then to 15 gpm at 10 years. The minimum flow of 15 gpm would then be expected to continue for the life of the alternative. With the flow substantially reduced, it may be possible to discontinue the treatment system, saving significant O&M costs.

The discussion in Alternative 3 on other components (surface water controls; dewater, excavate, and fill lagoons; security fence; and monitoring), would apply to Alternative 4. The present worth cost estimates for this Alternative are $41,647,000 for complete treatment and $40,398,000 for pretreatment.


Leave Road
Cap
Fill
Slurry Wall
Ground Surface
Original Water Table Elevation
Water Table After Implementation
Edwards Run
Mt. Laurel / Wenonah
Englishtown Piezometric Surface
Alluvium
Marshalltown Formation
Englishtown Formation
Woodbury Clay
ELEVATION IN FEET ABOVE M.S.L.
100
80
60
40
20
0
-20
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800
1200
1600
2000
2400
2800
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3600
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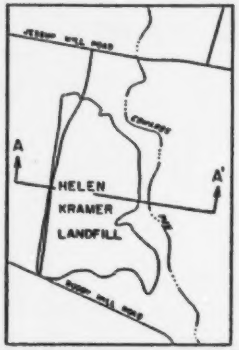
10 X VERTICAL EXAGGERATION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LANDFILL

LEGEND

▽ — — WATER LEVEL IN MT. LAUREL/WENONAH PRIOR TO CAPPING & SLURRY WALL

▽ — - — WATER LEVEL IN MT. LAUREL/WENONAH AFTER CAPPING & SLURRY WALL

— ▽ - - - ENGLISHTOWN PIEZOMETRIC SURFACE

NUS-HELEN KRAMER LANDFILL

SCHEMATIC CROSS-SECTION SHOWING
MT. LAUREL/WENONAH WATER TABLE
BEFORE AND AFTER CAPPING & SLURRY WALL

drawn DLB	approved SMS	drawing no. 2
checked SMS	date 7-25-85	

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earth resources consultants
harrisburg pennsylvania

Alternative #5A: This alternative includes a clay cap; passive gas ventilation; an upgradient slurry wall; dewater, excavate, and fill lagoons; surface water controls; security fence; and monitoring.

This alternative does not contain a groundwater/leachate collection or treatment system. This alternative would mitigate the release of hazardous substances to the environment by reducing the quantity of leachate generated. As previously discussed in Alternative 4, the leachate flow would decrease from the initial annualized flow of 124 gpm to 15 gpm over a ten year period.

This alternative would allow the the continued uncontrolled discharge of leachate to Edwards Run at a lower rate than the current discharge. In an effort to attempt to quantify the health and environmental impacts from the continued discharge of leachate to Edwards Run, it was assumed that the health risks decrease proportionally with the flow. This would result in the potential increased cancer risk for ingestion of Edwards Run water to drop to $2.8X10^{-4}$ within ten years after installation of the action. This risk is still considerably higher than the generally accepted $1X10^{-6}$ risk.

The above assumption is not as easily applied to the environmental effects. Many of the preliminary discharge criteria parameters are not flow dependent and the concentration of contaminants in the leachate may not be flow dependent.

The mechanisms for formation of leachate would change after implementation of this alternative. An increasingly significant portion of the leachate would be predominantly clean Englishtown water discharging into the Mount Laurel due to a vertical gradient reversal created by the slurry wall. This would tend to dilute the contaminants. Conversely, the lack of a significant amount of clean water entering the site in the Mount Laurel from the west, that could be diluting the leachate now, would not be present after construction of the slurry wall and therefore, that dilution would no longer be available. The concentrations could then be expected to increase. Also the amount of percolation through the fill currently could be diluting pure contaminants or it could be the mechanism that "flushes" the waste, releasing contaminants. After implementation of the alternative, higher concentrations of contaminants may flow undiluted into Edwards Run or may not be released at all from the waste, although the flow is expected to decrease significantly.

Due to the currently unknown degree of variability of the contaminant concentrations in the leachate, a reasonable quantification of the environmental effects of Alternative 5A cannot be made and the assumption for the health risk decrease may not be valid. A reasonable subjective estimation would be that the contaminant concentration would not meet the non-flow dependent criteria. The environmental effect on the stream and the potential health threat after the minimum flow of 15 gpm is achieved (10 years) could be negligible if the leachate discharged uniformly over the ± 3000 ft. contact with Edwards Run and did not channel itself to discrete dicharge points.

The discussions of the other components to this alternative are the same as those discussed in Alternative 3.

The estimated present worth cost for Alternative 5A is $36,347,000.

Alternative #5B: This alternative includes; a groundwater collection and treatment system; soil cap; upgradient slurry wall; passive gas ventilation; dewater,excavate, and fill lagoons; surface water controls; security fence; and monitoring.

This alternative differs from Alternative 4 in that it utilizes a soil cap and passive gas ventilation. This alternative has the lower cost soil cap to reduce, but not eliminate, percolation through the refuse. Leachate flow to the collection and treatment system would be expected to be reduced by 60% from 124 gpm to 50 gpm (annualized flow). By continuing to allow some percolation through the fill, it is felt that this may enhance the stabilization of the waste and "flush" the contaminants from the refuse into the collection and the treatment system, yet still removing the direct contact hazard.

With the installation of the slurry wall, the only significant source of water for leachate generation would be rainfall. The irregularity of rainfall may present some operational problems with the treatment system. Large peak flows would be encountered after heavy rains. Groundwater levels in the eastern side of the landfill rose significantly during and shortly after a rain storm of one inch. Within two days after the storm, the water level returned to approximately its original level. This indicates that the landfill is saturated and any amount of rain that percolates into the fill causes a similar amount of leachate to be discharged from the fill. Based on this observation, the peak daily flow in the treatment system could be 116 gpm. Conversely, during winter months when percolation is essentially zero, the flow in the system would only be 15 gpm from leakage through the slurry wall and up from the Englishtown. The flow range for the treatment system could range between 15 gpm to 116 gpm. A treatment system could be designed to handle this range, possibly using stabilization tanks, recycle loops, and treatment technologies that do not require a minimum flow in order to operate effectively. It is technically feasible to effectively treat this wide flow range, but it would be more operation intensive than constant flow treatment systems and therefore the reliability is less than the other clay cap alternatives.

Also because of the sporadic nature of the rainfall the piezometric head under the fill cannot be calculated. Therefore the vertical hydraulic gradients between the Mount Laurel and the Englishtown cannot be calculated. The effect of this alternative on the potential for contamination of the Englishtown is expected to be reduced over Alternative 3 but would be a greater potential than Alternatives 4 or 5A.

The discussion in Alternative 3 for the passive gas ventilation system would be the same as this alternative. The adverse effects during construction and the institutional constraints would also be the same.

The estimated present worth costs for Alternative 5B are $35,324,000 for complete treatment and $34,317,000 for pretreatment.

Alternative #5C: This alternative includes; clay cap; passive gas ventilation system; dewater, excavate, and fill lagoons; security fence and monitoring.

This alternative is the same as Alternative 5A except that it does not include an upgradient slurry wall. Not installing an upgradient slurry wall results in a similiar potential risk to the Englishtown as discussed in Alternative 3. The lack of a groundwater collection and treatment system would present greater risks and institutional constraints discussed in Alternative 5A with respect to the leachate discharge to Edwards Run. The passive gas ventilation system, lagoon remediation, security fence and monitoring would have the same risks, benefits, and institutional constraints discussed in Alternative 3.

The benefit to this alternative over Alternatives 3 and 5A is a lower present worth cost of $28,934,000.

Alternative #5D: This Alternative includes; a soil cap; groundwater/leachate collection and treatment system; passive gas ventilation system; dewater, excavate, and fill lagoons; security fence and monitoring.

This alternative is the same as Alternative 5B except that it does not contain an upgradient slurry wall. This results in a potential risk for contamination of the Englishtown greater than all alternatives except the #1 (no action) and 5E. The flow in the leachate treatment system would be sporadic, as discussed in Alternative 5B, but would range from 50 gpm to 176 gpm with an annualized flow of 85 gpm. This range would be expected to present the same technical and operations problems discussed for Alternative 5B.

The risks, benefits, and constraints associated with the passive gas ventilation system, lagoon remediation, security fence, and monitoring would be the same as those discussed in Alternative 3.

The estimated present worth costs for Alternative 5D are $30,195,000 for complete treatment and $30,476,000 for pretreatment.

Alternative 5E: This Alternative is only a management of migration remedial action. It involves connecting fourteen homes with wells along Jessups Mill and Boody Mill Roads to a municipal water supply. This action would eliminate the potential for private well contamination from the site. It would not mitigate any other risks and hazards associated with the site.

Cost Evaluation

The alternative evaluation above discussed the effectiveness of the remedial alternatives. Another factor in selecting a remedial action is cost. Table 13-3 shows the estimated capital, annual operation and maintenance (O&M), and present worth cost for each alternative. The capital costs include indirect costs of 15% for engineering and design, 5% for administrative and legal costs, and 25% contingency. Present worth costs were calculated at a 10% discount rate over a 30 year period with all the capital costs incurred at year zero.

Alternatives 1, 2, and 5E contain, for the most part, unique remedial alternative components. However, Alternatives 3,4,5A through D contain the same basic components of a cap, lagoon remediation, security fence, and monitoring, but vary with respect to the material in the cap, groundwater leachate collection system, an upgradient slurry wall, and the gas collection system. A discussion on the costs of these components follows in order to weigh the individual costs of the components with their effectiveness which was previously discussed.

To estimate the cost of the "clay" cap versus the soil (no clay) cap, Alternatives 5B and 4 can be compared since the only difference is the cap material. The present worth cost of Alternative 5B (with complete treatment) is $35,323,700 and the present worth cost for Alternative 4 (with complete treatment) is $41,647,000. This indicates the clay addition to the cap increases the present worth cost by $6,323,3000 or 18%. The capitalized O&M costs of Alternatives 4 and 5B are $3,558,000 and $4,103,000. This indicates that adding clay to the cap reduces the capitalized O&M costs by $545,000 or 13%.

TABLE

Table 13-3

Remedial Alternatives
Cost Summary and Comparison

			O & M		
Alternative	Capital Cost ($1,000)	Year	Cost ($1,000)	Capitalized[a] Cost ($1,000)	Present Worth[a] ($1,000)
1. No Action	235	1-30	109.9	1,036.0	1,271.0
2. New RCRA Landfill	132,484	1	1,229.7	1,117.9	137,309.2
		2	965.4	797.8	
		3	680.0	510.9	
		4	664.6	453.9	
		5	649.2	403.1	
		6	633.8	357.8	
		7-30	233.4	1,183.8	
3. Achieve Federal Standards					
a) With Complete Treatment	30,114	1	789.4	717.6	35,975.4
		2-30	603.9	5,143.8	
b) With Pretreatment	28,503	1	1,045.2	950.2	35,874.7
		2-30	753.9	6,421.5	
4. Exceed Federal Standards					
a) With Complete Treatment	38,089	1	792.1	720.1	41,647.0
		2	521.6	431.1	
		3	412.3	309.8	
		4-5	344.6	449.3	
		6-9	296.6	583.8	
		10	311.6	120.1	
		11-19	286.6	636.4	
		20	301.6	44.8	
		21-29	286.6	245.3	
		30	301.6	17.3	
b) With Pretreatment	36,478	1	1,047.9	952.6	40.398.4
		2	621.6	513.7	
		3	447.3	336.1	
		4-5	361.6	471.5	
		6-9	296.0	582.6	
		10	311.6	120.1	
		11-19	286.6	636.4	
		20	301.6	44.8	
		21-29	286.6	245.3	
		30	301.6	17.3	
5. Achieve Some But Not All Federal Standards					
a) Cap & Slurry Wall	34,566	1-30	188.9	1,780.8	36,346.8
b) "No Clay" Cap, Slurry Wall, Treatment					
i) With Complete Treatment	31,220	1	785.4	714.0	35,323.7
		2	559.9	462.7	
		3	459.9	345.5	
		4-5	405.6	528.9	
		6-10	369.9	870.7	
		11-30	361.9	1,187.9	
ii) With Pretreatment	29,607	1	1,040.9	946.3	34,316.9
		2	709.9	586.7	
		3	529.9	398.1	
		4-5	440.6	574.5	
		6-10	396.9	934.3	
		11-30	386.9	1,270.0	
c) Cap	27,153	1-30	188.9	1,780.8	28,933.8
d) "No Clay" Cap, Treatment					
i) With Complete Treatment	23,902	1	785.4	714.0	30.194.2
		2-30	654.9	5,578.2	
ii) With Pretreatment	22,290	1	1,041.2	946.6	30,475.8
		2-30	849.9	7,239.2	
e) Extend Public Water Supply	589	1-30	109.9	1,036.0	1,625.0
Options:					
1. Downgradient Slurry Wall	757	1-30	0	0	757.0
2. Irrigation of Treated Effluent	381	1-30	69.2	652.3	1,033.3

[a] Discount rate of 10% over 30-year project life.

The addition of the slurry wall is approximately $3,928,000. The addition of the slurry wall lowers the capitalized O&M costs by $2,338,000 or 40% from $5,896,000 (no wall) to $3,558,000 (with a wall). If at some time prior to 30 years the leachate no longer requires treatment, due to the low flow, the treatment system will no longer be needed and the O&M savings would increase.

The costs associated with the addition of the groundwater/leachate collection and treatment system can be illustrated by comparing Alternatives 3 and 5C. The addition of the collection and treatment system (designed for 288,000 gpd) increases the present worth costs by $7,041,600 and $6,940,900 for complete and pretreatment, respectively. As shown in Table 13-3 the annual O&M cost for the treatment system are flow dependent and therefore vary for each alternative. Of the alternatives that contain treatment, the O&M of the treatment system is the most significant portion of the overall O&M costs.

The active gas collection and treatment system represents approximately $600,000 in increased present worth costs over the passive gas ventilation system. The passive gas system has a direct capital cost of $509,000 and insignificant or no O&M. The active gas system has a direct capital cost of $897,000 and annual O&M costs of $2,700 per year and $15,000 at 10,20,30 years for carbon replacement.

COMMUNITY RELATIONS

A public meeting was held on April 26, 1984 at the Mantua Township Municipal Building to discuss the work to be undertaken by EPA's consultant for the RI/FS. Notices of the meeting were sent to all local officials and interested parties as outlined in the Helen Kramer Landfill Community Relations Plan. At this meeting, EPA officials provided an overview of the Superfund program. They also discussed the RI/FS activities which were going to be performed as part of the Helen Kramer project. Following this presentation, the meeting was concluded with a question and answer session.

At the request of the Mayor a briefing on the status of the RI/FS was held on April 30, 1985 at the Mantua Township Municipal Building. The Mayor was informed of the preliminary results of the Remedial Investigation and updated on the schedule for completion of the Feasibility Study.

A second public meeting was held on August 1, 1985 at the Mantua Township Municipal Building to discuss the remedial alternatives. An information package including an agenda and a fact sheet were provided to the approximately 20 people who attended. Copies of the draft feasibility study and notification of the public meeting were sent to local officials, other interested parties, and document repositories for public review. EPA officials and their consultant discussed the remedial alternatives and responded to the concerns and questions raised to the public.

The public comment period on the RI/FS began July 22, 1985 and extended through August 12, 1985. A Responsiveness Summary addressing the concerns and comments received at the August 1st public meeting and during the comment period is attached to this document.

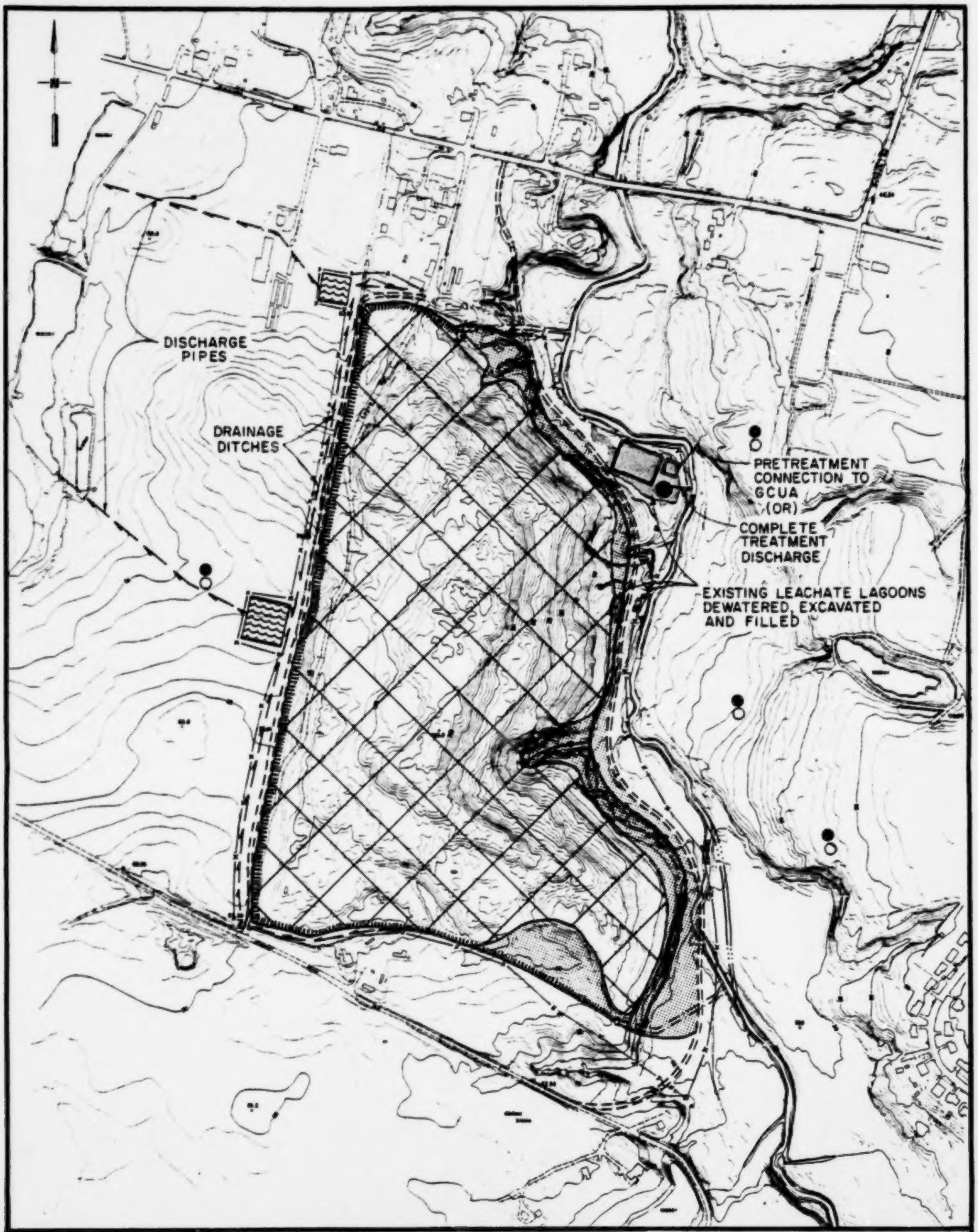
RECOMMENDED ALTERNATIVE

According to the CFR Part 300.68 (J), cost-effective is described as the lowest cost alternative that is technically feasible and reliable and which effectively mitigates and minimizes damages to and provides adequate protection of public health, welfare, and the environment. A cost comparison of the remedial alternatives is presented in Table 13-3. The evaluation of the remedial alternatives leads to the conclusion that Alternative #4 is the appropriate cost-effective alternative (see figure 12-13).

Alternative #4 Includes:

- Groundwater/Leachate Collection and Treatment
- Clay Cap
- Upgradient Slurry Wall
- Active Gas Collection and Treatment
- Dewater, Excavate, and Fill Lagoons
- Security Fence
- Monitoring

This alternative effectively mitigates all the current and potential adverse public health and environmental impacts caused by the release of hazardous substances at the site. The groundwater/leachate collection and treatment system substantially reduces the discharge of hazardous substances to Edwards Run. The clay cap and upgradient slurry wall reduce the potential for contamination of the Englishtown Aquifer, the amount of leachate which is generated and the amount to be treated to the extent practicable. The active gas collection and treatment system is needed to fully mitigate the potential air contamination and reliably control landfill gases.


N
DISCHARGE PIPES
DRAINAGE DITCHES
PRETREATMENT CONNECTION TO GCUA (OR) COMPLETE TREATMENT DISCHARGE
EXISTING LEACHATE LAGOONS DEWATERED, EXCAVATED AND FILLED

LEGEND

LEACHATE AND SEEP COLLECTION AND LEACHATE TRENCH	ROAD (NEW)
☐ D ● PRETREATMENT FACILITY; COMPLETE TREATMENT (EXTRA FACILITY) ●	STREAM RELOCATION
1 FOOT CLAY CAP	● DEEP MONITORING WELL
▨ 2 FOOT CLAY CAP WITH FORCED VENTILATION, CARBON ADSORPTION, AND METHANE FLARING	○ SHALLOW MONITORING WELL
UPGRADIENT SLURRY WALL	LAGOON DEWATERING, EXCAVATION AND FILL
SLURRY WALL RELIEF DRAIN	SURFACE WATER CONTROL DISCHARGE PIPES AND DRAINAGE DITCHES
FENCE	
GATE	SURFACE WATER CONTROL STORAGE PONDS WITH GRADED OUTLET DEVICES

400' 0 400'
SCALE IN FEET

NUS-HELEN KRAMER LANDFILL	LAWLER, MATUSKY AND SKELLY ENGINEERS

REMEDIAL ALTERNATIVES
ALTERNATIVE 4
EXCEED FEDERAL STANDARDS

drawn RAM	approved SMS	drawing no. FIGURE 12-13
checked RMM	date 5-15-85	

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Alternative 1 (no action) and 5E (extend water lines) do not effectively mitigate the adverse impacts caused by the site. Alternative #2, (new RCRA landfill), is considered to be cost prohibitive and presents a substantial safety hazard during implementation. Of Alternative 3,4,5A through D, Alternative #4 is the only alternative that effectively mitigates the adverse impacts through all the potential pathways of exposure.

Alternative 4 currently has two treatment options for the groundwater/leachate, complete treatment on site and discharge to Edwards Run, and on-site pretreatment and discharge to the Gloucester County Utilities Authority Wastewater Treatment Plant. The need for leachate collection and treatment has been established, the extent of the on-site treatment is independent of the evaluation of the alternatives in this Record of Decision. The extent of on-site treatment is dependent on the Treatability Study and the institutional constraints established by the state and local authorities. Upon completion of the Treatability Study and based on the Treatability Study the Region will determine the least cost treatment option. Then working with the state and local authorities the Region will evaluate the treatment option with respects to the institutional constraints. The decision on which treatment system is implemented will be determined by the least present worth cost treatment option that is environmentally acceptable and implementable.

Because of the substantial flow decrease with time for Alternative 4, it may be possible to rent a number of package treatment plants instead of building a plant on site. This should lower the capital cost of the treatment plant significantly.

COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

The recommended alternative, #4, is envisioned to be implemented, constructed and operated in full compliance with all applicable existing environmental statutes with the exceptions discussed below.

•Floodplains and Wetlands

The preliminary conceptual plans for the recommended remedial alternative indicate that components of the action are within a designated 100 year floodplain. The work is affected by Executive Order (EO) 11988 - Floodplain Management, and the recommended alternative will comply with EO 11988. To ensure compliance with EO 11988, an evaluation of the conceptual plans will be performed during the design phase to determine what actions, if any, are needed to protect the components from flooding and if the components adversely affect the floodplain. If the plans for the alternative do not comply, the design will be modified in order to comply with EO 11988. At this time, there appears to be sufficient flexibility in the conceptual plans so that compliance with EO 11988 would be technically feasible and would not significantly affect the environmental benefits or estimated cost of the recommended alternative.

The impacts of the site currently, and the recommended alternative are also believed to be affected by Executive Order 11990 - Protection of Wetlands. The area adjacent to the site appears to conform to the regulatory definition of a wetland. It appears that approximately three acres of wetlands are currently adversely affect by the site. Severly stressed vegetation is present in the wetlands near the south ravine.

The recommended remedial action would prevent any further contamination of these wetlands. The area should recover naturally. The cap is expected to intrude into the wetlands and cover approximately one acre. The design will attempt to minimize the encroachment to the extent feasible. The overall effect of the remedial action is beneficial to the wetlands by restoring two acres. Another six acres of wetlands is located south of the landfill and appears to only be impacted in a small area where the southern tip of the landfill meets the edge of the wetlands. The only contamination observed in this area is visual iron staining, The recommended action would be expected to eliminate further contamination without encroaching on the wetlands.

•RCRA Subtitle C, 40 CFR Part 264

The clay cap in the recommended alternative is believed to be in compliance with the criteria listed in CFR 264.310 (a). However, RCRA guidance documents for design of a final landfill cover include a 20 mil synthetic liner placed above the clay and below the sand drainage layer. As previously discussed, it is considered technically impracticable to include a synthetic liner in the cap of the recommended alternative. The RCRA guidance recommends a slope of 3-5% for final cover. In order to conform to the recommended slope an estimated 3.77 million cubic yards of fill would be needed to bring the existing slopes up to 5%. This is almost twice the estimated volume of the waste at the site. The cost and time to excavate, haul, and recompact the fill would be prohibitive and impracticable. From an environmental perspective the RCRA final cover would almost eliminate the wetland area adjacent to the site since the cap would have to be extended over this area. The RCRA cap would necessitate relocating Edwards Run to a new channel on the other side of the valley or installing a culvert under the cap.

In accordance with current CERCLA/RCRA Guidance, the clay cap in the recommended alternative was evaluated using the HELP model developed for evaluating final cover. The model estimates the leakage through the clay cover would be 700 gpd. This represents a 99.2% reduction in percolation through the fill. The RCRA recommended cap could achieve a 100% reduction in percolation assuming the liner remains intact and is not affected by differential settling. The increased reduction of 0.8% is not considered to be a significant improvement when weighed against the adverse technical considerations.

The installation of a RCRA recommended final cover at the Helen Kramer Landfill Site is considered technically impracticable for the reasons discussed above. The RCRA cap would significantly adversely affect the wetlands adjacent to the site and therefore may present further unacceptable environmental impacts.

OPERABLE UNITS

There are no operable units anticipated for the recommended alternative. Implementation of this alternative is expected to be the final remedy for this site.

It is possible to implement some of the remedial components independent of each other. For example, the slurry wall and collection trench can be implemented independent of each other and then be followed with cap installation. The sequence of construction of the recommended alternative components will be evaluated during design. If feasible, it would be desirable to phase the construction to allow for phasing of the funding.

A significant cost savings may be realized by utilizing small "package" treatment units instead of building a permanent treatment plant to handle the high initial flow. As the flow decreases with time the modules of the package units can be removed. It may also be possible to discontinue on-site treatment when the flow stabilizes and discharge directly to the POTW. Utilization of modular "package" treatment systems will be considered during design.

As a means to reduce the impacts of differential settling on the cap maintenance, phasing the installation of the cap and monitoring of the settling of the cap should be evaluated in the design phase.

Operation & Maintenance

All the remedial components of the recommended alternative require operation and/or maintenance to varying degrees, except the lagoon remediation.

FUTURE ACTION

Additional Studies

It is anticipated that additional investigations and/or studies may be necessary in order to properly design the selected remedy. These may include, but are not limited to; pilot studies for the components of the on-site treatment system, additional borings for more detailed geologic data, and additional gas testing for sizing the treatment system.

Schedule	Date
- Final Record of Decision	September 1985
- Obligate design funds	Pending CERCLA Reauthorization
- Amend State Superfund Contract	September 1985
- Continue Responsible Party Search	Ongoing
- Initiate design	Pending CERCLA Reauthorization
- Complete design	Pending Funding Reauthorization

APPENDIX 1

MESSAGE FLAGS FOR CHEMISTRY DATA

[ ]	Result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit.
B	Analytic is found in the blank as well as a sample. It indicates possible probable blank contamination and warns the data user to take appropriate action.
S	Value determined by method of standard addition.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds, where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the indicated detection limit but greater than zero.
K	Actual value within the limitations of this method is less than the value given.
B	Blank greater than 1/2 method detection limit and greater than 1/2 concentration in sample.
R	Indicates spike sample recovery is not within control limits.

MESSAGE FLAGS FOR CHEMISTRY DATA, CON'T.

UNDETECTED:	Not present in sample above detection limit.
NOT REPORTED:	No analytical results at time of report preparation due to: parameters not required by CLP contract, lost sample or analytical results, delay of data transmittal.
PRELIMINARY:	Data not quality assured and subject to change.
FINAL:	Data quality assured.
REJECTED:	Data reported but results rejectd due to quality assurance problems such as bad methods, poor recovery, holding time violation, bad surrogate, or other.

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-1S	X-1I	X-1I	X-1D	X-1D	X-2S	X-2S	X-2I
Sample Code	XS 101	XI 101	XI 201	XD 101	XD 201	XS 102	XS 102 DUP.	XI 102
Inorganic Sample #	MBA 994	MBA 467		MBA 468		MBA 470	MBA 473	MBA 471
Organic Sample #	B 2263	B 2262		B 2261		B 4197	B 4188	B 4196
Date Sampled	12/4/84	12/4/84	01/02/85	12/4/84	01/02/85	12/6/84	12/6/84	12/6/84
Date Shipped	12/6/84	12/6/84	01/03/85	12/6/84	01/03/84	12/6/84	12/6/84	12/6/84
Date Shipped								
North Grid	344462.268987	344450.250840	344450.250840	344442.619728	344442.619728	346722.180450	346722.180450	346711.680030
East Grid	1848589.976300	1848611.694861	1848611.694861	1848631.337147	1848631.337147	1849777.051621	1849777.051621	1849774.036171
FIELD PARAMETERS								
Flow (gpm)	0.4	4.8	4.6	13.6	12.0	0.7	NOT MEASURED	3.2
Temp. (Celsius)	11.5	11.5	11.5	10.3	11.5	15	NOT MEASURED	15.3
pH	5.13	NOT MEASURED	NOT MEASURED	8.03	NOT MEASURED	6.00	NOT MEASURED	5.8
Specific Conductivity (umho/cm)	68	80	78	132	130	1000	NOT MEASURED	250
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	343	776	UNDETECTED	[63]	UNDETECTED	4690	3790	213
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	R [10]	72	102	UNDETECTED
Arsenic	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	[7.8]	[9.9]	13
Barium	[46]	[76]	UNDETECTED	[45]	UNDETECTED	[101]	[102]	[22]
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[0.6]	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	[5]	UNDETECTED	[.4]	UNDETECTED	5.4	UNDETECTED
Calcium	[3370]	8020	9000	33800	37000	50100	50800	15500
Chromium	10	29	20	[6.2]	20	43	37	UNDETECTED
Cobalt	UNDETECTED	[9.2]	UNDETECTED	UNDETECTED	UNDETECTED	[36]	[37]	[38]
Copper	[12]	40	UNDETECTED	[12]	UNDETECTED	[22]	[19]	[6.2]
Iron	1320	2380	REJECTED	626	1460	147000	146000	22100
Lead	[3.8]	8.9	REJECTED	5.9	REJECTED	6.7	7	5.7
Cyanide	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Magnesium	[3470]	[2930]	[3280]	[1450]	[1750]	70800	80200	15300
Manganese	37	117	110	22	42	3520	3440	2150
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	[16]	44	UNDETECTED	UNDETECTED	UNDETECTED	[36]	[36]	[21]
Potassium	7000	[4840]	[3400]	9560	6300	[3210]	[2810]	[2170]
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[3.3]	[3]	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	13	10	UNDETECTED
Sodium	REJECTED	REJECTED	[4000]	REJECTED	[3200]	367000	381000	REJECTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	[6.1]	UNDETECTED	UNDETECTED	UNDETECTED	[47]	[47]	UNDETECTED
Zinc	REJECTED	136	70	REJECTED	30	43	49	REJECTED
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-1S	X-11	X-11	X-1D	X-1D	X-2S	X-2S	X-2I
Sample Code	XS 101	XI 101	XI 201	XD 101	XD 201	XS 102	XS 102 DUP.	XI 102
Inorganic Sample #	MBA 994	MBA 467		MBA 468		MBA 470	MBA 473	MBA 471
Organic Sample #	D 2263	B 2262		B 2261		B 4197	B 4188	B 4196
Date Sampled	12/4/84	12/4/84	01/02/85	12/4/84	01/02/85	12/6/84	12/6/84	12/6/84
Date Shipped	12/6/84	12/6/84	01/03/85	12/6/84	01/03/84	12/6/84	12/6/84	12/6/84
Date Shipped								
North Grid	344462.268987	344450.250840	344450.250840	344442.619728	344442.619728	346722.180450	346722.180450	346711.680030
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SAS PARAMETER	FINAL	FINAL	PRELIMINARY		PRELIMINARY			
	ug/l	ug/l	ug/l		ug/l			
Chloride	NOT REPORTED	NOT REPORTED	10000	NOT REPORTED	2000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Nitrate	NOT REPORTED	NOT REPORTED	17000	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TOC	3000	7000	11900	NOT REPORTED	16700	NOT REPORTED	NOT REPORTED	NOT REPORTED
BOD	NOT REPORTED	NOT REPORTED	1000	NOT REPORTED	2900	NOT REPORTED	NOT REPORTED	NOT REPORTED
COD	NOT REPORTED	NOT REPORTED	7000	NOT REPORTED	10000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, pht	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity (CaCO3)	NOT REPORTED	NOT REPORTED	7000	NOT REPORTED	86000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, bicarbonate	NOT REPORTED	NOT REPORTED	7000	NOT REPORTED	86000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, carbonate	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Ammonia	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TSS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride, soluble (F)	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	300	NOT REPORTED	NOT REPORTED	NOT REPORTED
Total P	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Halogen(TOX)	UNDETECTED	UNDETECTED	27000	NOT REPORTED	15	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	5700	NOT REPORTED	8000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	3300	NOT REPORTED	15000	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,0 (DN)	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	80	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	11900	NOT REPORTED	16700	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	140000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids, Suspended	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	umho/cm 3130	NOT REPORTED	umho/cm3 170	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-1S	X-1I	X-1I	X-1D	X-1D	X-2S	X-2S	X-2I
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Inorganic Sample #	MBA 994	MBA 467		MBA 468		MBA 470	MBA 473	MBA 471
Organic Sample #	B 2263	B 2262		B 2261		B 4197	B 4188	B 4196
Date Sampled	12/4/84	12/4/84	01/02/85	12/4/84	01/02/85	12/6/84	12/6/84	12/6/84
Date Shipped	12/6/84	12/6/84	01/03/85	12/6/84	01/03/84	12/6/84	12/6/84	12/6/84
Date Shipped								
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East Grid	1848589.976380	1848611.694861	1848611.694861	1848631.337147	1848631.337147	1849777.051621	1849777.051621	1849774.036171
ORGANICS								
VOLATILE	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 3	J 3	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 3	J 3	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	3	UNDETECTED
methylene chloride	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	J 5	8
acetone	63	190	47	340	100	UNDETECTED	25	22
trans-1,2-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	3
1,2-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2,2-terachloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
trichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
vinyl chloride	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	19	19	UNDETECTED
4-methyl-2-pentanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 5	UNDETECTED
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
toluene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 3	J 3	UNDETECTED
2-butanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 5	7
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 5	UNDETECTED
Ethylbenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	38	37	4
Total Xylenes	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	28	29	3
SEMIVOLATILE	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 13	J 12	UNDETECTED
Phenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
bis(-2-Chloroethyl)Ether	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-Methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	UNDETECTED	22	UNDETECTED	22	UNDETECTED	UNDETECTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	48	UNDETECTED	UNDETECTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 16	J 29	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzyl alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Phenanthrene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

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East Grid	1848589.976380	1848611.694861	1848611.694861	1848631.337147	1848631.337147	1849777.051621	1849777.051621	1849774.036171
PESTICIDE	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
Endosulfan 1	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma BHC (Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alph-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfate II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Ethane,1,1,'-Oxbis-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 31	UNDETECTED
1,3-Propanediol,2,2-Dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 130	J 27	UNDETECTED
Bicyclo[2.2.1]Heptan-2-one,1,3,3-Trimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 79	J 120	UNDETECTED
Bicyclo[2.2.1]Heptan-2-one,1,7,7-Trimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 350	UNDETECTED
1,3-Benzenediol	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 25	UNDETECTED
1,12-Tridecadiene	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 110	UNDETECTED
2,5,8,11,14-Pentaoxapentadecane	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 51	UNDETECTED
3-Hexanol,3,5-Dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 200	J 200	25
3-Hexanol,3,5-Dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 34	J 34	UNDETECTED
Butane,2,2'-Oxybis-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 40	J 50	UNDETECTED
Benzoicacid,4-(1,1-Dimethyl ethyl)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 20	UNDETECTED
Benzenesulfonamide,N,N,4-Tri methyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 120	J 84	UNDETECTED
2(3H)-Benzothiazolone	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 31	UNDETECTED
Benzenesulfonamide,N-Butyl-4-Methyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 38	J 35	UNDETECTED
1-Propanol,3-(Diethylamino)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 24	J 46	UNDETECTED
2-Propanol,1-(2-ethoxypropoxy)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 44	J 43	UNDETECTED
2-Propanol,1-(1-Methylpropoxy)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 630	J 230	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-1S	X-1I	X-1I	X-1D	X-1D	X-2S	X-2S	X-2I
Sample Code	XS 101	XI 101	XI 201	XD 101	XD 201	XS 102	XS 102 DUP.	XI 102
Inorganic Sample #	MBA 994	MBA 467		MBA 468		MBA 470	MBA 473	MBA 471
Organic Sample #	B 2263	B 2262		B 2261		B 4197	B 4188	B 4196
Date Sampled	12/4/84	12/4/84	01/02/85	12/4/84	01/02/85	12/6/84	12/6/84	12/6/84
Date Shipped	12/6/84	12/6/84	01/03/85	12/6/84	01/03/84	12/6/84	12/6/84	12/6/84
Date Shipped								
North Grid	344462.268987	344450.250840	344450.250840	344442.619728	344442.619728	346722.180450	346722.180450	346711.680030
East Grid	1848589.976380	1848611.694861	1848611.694861	1848631.337147	1848631.337147	1849777.051621	1849777.051621	1849774.036171
TENTATIVELY IDENTIFIED COMPOUNDS	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
1-Cyclohexene-1-Methanol,.Alpha .,2,6,6,-Tetramethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 36	J 38	UNDETECTED
Benzenamine,2-Chloro-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 35	J 46	UNDETECTED
Furan,Tetahydro-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 11	UNDETECTED	UNDETECTED
bicyclo\2.2.1\heptan-2-one,1,3,3-trimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 24	UNDETECTED	UNDETECTED
Cyclohexane,(2-Methypropyl)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 30	UNDETECTED	UNDETECTED
Butane,2-Methoxy	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 120	UNDETECTED	UNDETECTED
Bicyclo[3.1.1]Heptan-2-One,3,6,6-Trimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 74	UNDETECTED	UNDETECTED
Ethene,(2-Ethoxy-1-Methoxy ethoxy)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 49	UNDETECTED	UNDETECTED
Ethanol,2-[2-2-Butoxyethoxy) Ethoxy]-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 36	UNDETECTED	UNDETECTED
1-Butanol,2,2-Dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 25	UNDETECTED	UNDETECTED
Benzamide,N-(1,1-Dimethylethyl)-4-Methyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 34	UNDETECTED	UNDETECTED
1H-Indene,Octahydro-2,3a,4-Trimethyl-2-(1-Methylethy	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 50	UNDETECTED	UNDETECTED
Benzene,Methyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	11
1-Hexene,3,4,5-Trimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 16
3-Buten-2-one,3-Methyl-4-Phenyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 20
3-Buten-2-one,3-Methyl-4-Phenyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 39
2-Propanol,1-(1-Methylpropoxy)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 32
2-Propanol,1-(1-Methylpropoxy)-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 52
1,3-Propanediol,2,2-Dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 110	J 18
Heneicosane	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 6
Heneicosane	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 9
Docosane	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 9
Docosane	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	J 10
1,3-propanediol,2,2-dimethyl-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	130	UNDETECTED	UNDETECTED
Unknown	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 13	UNDETECTED
Unknown	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 7	UNDETECTED
Ketone	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 32	UNDETECTED
Pentone,2-Butoxy-	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 92	UNDETECTED
Hexanedioicacid,Dioctylester	NOT REPORTED	NOT REPORTED	J 30	NOT REPORTED	J 200	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-21	X-21	X-2D	X-3S				
Sample Code	XI 202	XI 202 DUP.	XD 102	XS 103	XD 104	XD 104 DUP.	XD 104FB	XD 104TB
Inorganic Sample #			MBA 472	MBA 478				
Organic Sample #			B 4195	B 4193	X-4D-A	X-4D-B	X-14	X-15
Date Sampled	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped	01/03/85	01/03/85	12/6/84'	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped								
North Grid	346711.680030	346711.680030	346651.730490	346243.986452				
East Grid	1849774.036171	1849774.036171	1849738.330316	1850370.272627				
FIELD PARAMETERS								
Flow (gpm)	4.5	NOT MEASURED	11.5	0.5	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
Temp. (Celsius)	13.5	NOT MEASURED	14	14.8	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
pH	5.25	NOT MEASURED	8.38	5.97	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
Specific Conductivity (umho/cm)	263	NOT MEASURED	250	195	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l				
Aluminum	800	900	UNDETECTED	3200	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Arsenic	REJECTED	REJECTED	UNDETECTED	[6]	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Barium	UNDETECTED	UNDETECTED	[34]	[124]	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Calcium	16000	16000	11600	69000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Chromium	20	10	[7.8]	62	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Cobalt	[30]	[20]	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Copper	UNDETECTED	UNDETECTED	[9.6]	84	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Iron	28100	27900	8240	31700	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Lead	[4]	REJECTED	[4.3]	5.1	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Cyanide	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Magnesium	15000	16000	[971]	[4190]	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Manganese	2200	2200	40	253	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Nickel	UNDETECTED	UNDETECTED	[7.5]	[14]	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Potassium	[980]	[970]	13500	6740	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sodium	32000	33000	REJECTED	REJECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	[27]	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Zinc	20	30	REJECTED	98	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

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HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-2I	X-2I	X-2D	X-3S				
Sample Code	XI 202	XI 202 DUP.	XD 102	XS 103	XD 104	XD 104 DUP.	XD 104FB	XD 104TB
Inorganic Sample #			MBA 472	MBA 478				
Organic Sample #			B 4195	B 4193	X-4D-A	X-4D-B	X-14	X-15
Date Sampled	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped								
North Grid	346711.680030	346711.680030	346651.738490	346243.986452				
East Grid	1849774.036171	1849774.036171	1849738.330316	1850370.272627				
SAS PARAMETER -------------	PRELIMINARY ug/l	PRELIMINARY ug/l		FINAL ug/l				
Chloride	69000	68000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate	NOT REPORTED		NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Nitrate	100	100	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbonate	NOT REPORTED		NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TOC	49900	50000	NOT REPORTED	21	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
BOD	7500	3900	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
COD	37000	36000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, pht	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity (CaCO3)	69000	68000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED		NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, bicarbonate	69000	68000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, carbonate	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Ammonia	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TSS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride, soluble (F)	100	100	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Total P	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Halogen(TOX)	43	42	NOT REPORTED	2270	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	6500	6500	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	4900	5700	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	49900	50000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	211000	216000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids, Suspended	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Specific Conductance,25C	umho/cm3 370	umho/cm3 420	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-2I	X-2I	X-2D	X-3S				
Sample Code	XI 202	XI 202 DUP.	XD 102	XS 103	XD 104	XD 104 DUP.	XD 104FB	XD 104TB
Inorganic Sample #			MBA 472	MBA 478				
Organic Sample #			B 4195	B 4193	X-4D-A	X-4D-B	X-14	X-15
Date Sampled	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped								
North Grid	346711.680030	346711.680030	346651.738490	346243.986452				
East Grid	1849774.036171	1849774.036171	1849738.330316	1850370.272627				
ORGANICS								
VOLATILE	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
chlorobenzene	9.3	UNDETECTED	UNDETECTED	J 74	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	J 58	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
methylene chloride	REJECTED	REJECTED	UNDETECTED	J 2900	J,B 5	J,B 5	J,B 5	J,B 5
acetone	15	UNDETECTED	33	2500	UNDETECTED	UNDETECTED	39	54
trans-1,2-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	5.5	5.3	UNDETECTED	UNDETECTED
1,2-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	2700	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	J 56	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2,2-terachloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
trichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	410	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
vinyl chloride	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzene	UNDETECTED	UNDETECTED	UNDETECTED	150	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-methyl-2-pentanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	UNDETECTED	UNDETECTED	UNDETECTED	J 82	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
toluene	UNDETECTED	UNDETECTED	UNDETECTED	920	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-butanone	UNDETECTED	UNDETECTED	UNDETECTED	1500	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	820	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethylbenzene	9.3	9.2	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Total Xylenes	6.2	5.2	UNDETECTED	J 200	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
SEMIVOLATILE	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
2,4-dimethylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Phenol	UNDETECTED	UNDETECTED	UNDETECTED	120	J 10	UNDETECTED	24	J 10
bis(-2-Chloroethyl)Ether	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	J 35	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-Methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	J 10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	140	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Di-n-Butylphthalate	11	10	UNDETECTED	UNDETECTED	UNDETECTED	J,B 10	B 14	J,B 10
bis(2-Ethylhexyl)Phthalate	J 10	11	UNDETECTED	UNDETECTED	UNDETECTED	120	UNDETECTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	J 10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzyl alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Phenanthrene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J,B 10	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-21	X-21	X-20	X-35				
Sample Code	XI 202	XI 202 DUP.	XD 102	XS 103	XD 104	XD 104 DUP.	XD 104FB	XD 104TB
Inorganic Sample #			MBA 472	MBA 478				
Organic Sample #			B 4195	B 4193	X-4D-A	X-4D-B	X-14	X-15
Date Sampled	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped								
North Grid	346711.680030	346711.680030	346651.730490	346243.986452				
East Grid	1049774.036171	1049774.036171	1049730.330316	1050370.272627				
PESTICIDE	FINAL	FINAL	PRELIMINARY	PRELIMINARY	PRELIMINARY	FINAL	FINAL	FINAL
---------	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Endosulfan 1	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma BHC (Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alph-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfate II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL	FINAL	PRELIMINARY	PRELIMINARY	FINAL	FINAL	FINAL	FINAL
--------------------------------	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2-Pyrrolidinone,1-Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 130	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethanol,2-butoxy-	UNDETECTED	UNDETECTED	UNDETECTED	J 230	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Bicyclo[2.2.1]Heptan-2-one,1,7,7-Trimethyl-	J 30	J 40	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Octacosane	UNDETECTED	UNDETECTED	J 12	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Octacosane	UNDETECTED	UNDETECTED	J 9	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptadecane	UNDETECTED	UNDETECTED	J 11	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Pentanone,4-Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 58	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Pentanone,4-Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 300	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzene,Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 350	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethene,Tetrachloro-	UNDETECTED	UNDETECTED	UNDETECTED	J 100	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Pentanone,4-Hydroxy-4-Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 26	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzene,1,4-Dimethyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 54	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzene,1,4-Dimethyl-	UNDETECTED	UNDETECTED	UNDETECTED		UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Pentanoicacid	UNDETECTED	UNDETECTED	UNDETECTED	J 100	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzeneaceticacid	UNDETECTED	UNDETECTED	UNDETECTED	J 32	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethane,1,2-Bis(2-Chloroethoxy)-	UNDETECTED	UNDETECTED	UNDETECTED	53	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Formamide,N,N-Dimethyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 25	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzene,Chloro-	UNDETECTED	UNDETECTED	UNDETECTED	J 30	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Hexanoicacid	UNDETECTED	UNDETECTED	UNDETECTED	J 120	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Octanol	UNDETECTED	UNDETECTED	UNDETECTED	J 56	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-21	X-21	X-2D	X-3S				
Sample Code	XI 202	XI 202 DUP.	XD 102	XS 103	XD 104	XD 104 DUP.	XD 104FB	XD 104TB
Inorganic Sample #		•	MBA 472	MBA 478				
Organic Sample #			B 4195	B 4193	X-4D-A	X-4D-B	X-14	X-15
Date Sampled	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped	01/03/85	01/03/85	12/6/84	12/6/84	3/11/85	3/11/85	3/11/85	3/11/85
Date Shipped								
North Grid	346711.680030	346711.680030	346651.738490	346243.986452				
East Grid	1849774.036171	1849774.036171	1849738.330316	1850370.272627				
Benzeneethanol	UNDETECTED	UNDETECTED	UNDETECTED	J 130	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethanol,1-(2-Butoxyethoxy)-	UNDETECTED	UNDETECTED	UNDETECTED	J 13	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,3-Cyclohexanedione,2-Butyl-2-Methyl-	UNDETECTED	UNDETECTED	UNDETECTED	J 60	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 20	J 100	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 20	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 100	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown Hydrocarbon	J 10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown Hydrocarbon	J 10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Hexanedioicacid,Dioctylester	J 30	J 20	UNDETECTED	UNDETECTED	UNDETECTED	80	UNDETECTED	UNDETECTED
Hexane,3,3-Dimethyl-	J 10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-4S	X-4S	X-5S	X-6S	X-6D	X-7S	X-7D	X-7D	X-8S
Sample Code	XS 104	XS 204	XS 105	XS 106	XD 106	XS 107	XD 107	XD 207	XS 108
Inorganic Sample #	MBA 477		MB 992	MB 991	MB 996	MB 995	MBA 466		MBO 993
Organic Sample #	B 4192		B 4182	B 4184	B 4183	B 4185	B 4186		B 4187
Date Sampled	12/6/84	01/03/85	12/4/84	12/4/84	12/4/84	12/5/84	12/5/84	01/03/85	12/5/84
Date Shipped	12/6/84	01/03/85	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85	12/6/84
Date Shipped									
North Grid	345192.425518	345192.425518	343767.259282	343513.128954	343514.879150	346159.991358	346153.986090	346153.986090	344872.645721
East Grid	1850499.075403	1850499.075403	1850998.406598	1850876.550619	1850884.715134	1851203.747789	1851202.733150	1851202.733150	1851019.123350
FIELD PARAMETERS									
Flow (gpm)	0.75	15.8	3.7	1.9	12	NOT MEASURED	12.8	15.8	1.0
Temp. (Celsius)	11.0	10.0	11.0	11.0	10.5	11.5	11.5	10.0	10.9
pH	5.03	NOT MEASURED	NOT MEASURED	4.81	6.61	5.15	8.05	5	4.67
Specific Conductivity (umho/cm)	950	325	153	95	162	85	89	325	105
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l
Aluminum	UNDETECTED	900	206	269	UNDETECTED	924	[49]	UNDETECTED	1840
Antimony	UNDETECTED	UNDETECTED	60	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	72	70	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	[3.7]
Barium	[122]	UNDETECTED	[103]	229	[118]	[67]	[48]	UNDETECTED	222
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	[0.6]	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[0.8]
Cadmium	6.8	[3]	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[.6]	UNDETECTED
Calcium	138000	216000	46300	6070	51500	13000	26400	25000	6190
Chromium	12	30	14	22	UNDETECTED	13	[5.9]	UNDETECTED	20
Cobalt	193	270	UNDETECTED	[9.1]	UNDETECTED	[11]	UNDETECTED	UNDETECTED	[21]
Copper	[12]	UNDETECTED	[16]	[14]	UNDETECTED	[10]	[11]	UNDETECTED	[9.3]
Iron	116000	176000	1380	910	384	1640	307	830	4600
Lead	11	REJECTED	12	[3.2]	[3.6]	[2.7]	6.9	REJECTED	9.3
Cyanide	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Magnesium	71800	89000	[3790]	7900	[4210]	[3400]	[1580]	2920	11200
Manganese	5070	6060	33	85	64	53	20	51	180
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	67	90	[11]	[35]	[11]	[22]	[8.9]	UNDETECTED	52
Potassium	18800	21000	[4060]	5370	[4300]	[3070]	[4530]	29000	[2980]
Selenium	18	14	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	[9.1]	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	272000	25000	REJECTED	REJECTED	REJECTED	UNDETECTED	REJECTED	44000	REJECTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Vanadium	[12]	[6]	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[8.2]
Zinc	590	810	REJECTED	132	REJECTED	41	REJECTED	40	285
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-4S	X-4S	X-5S	X-6S	X-6D	X-7S	X-7D	X-7D	X-8S
Sample Code	XS 104	XS 204	XS 105	XS 106	XD 106	XS 107	XD 107	XD 207	XS 108
Inorganic Sample #	MBA 477		MB 992	MB 991	MB 996	MB 995	MBA 466		MBO 993
Organic Sample #	B 4192		B 4182	B 4184	B 4183	B 4185	B 4186		B 4187
Date Sampled	12/6/84	01/03/85	12/4/84	12/4/84	12/4/84	12/5/84	12/5/84	01/03/85	12/5/84
Date Shipped	12/6/84	01/03/85	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85	12/6/84
Date Shipped									
North Grid	345192.425518	345192.425518	343767.259282	343513.128954	343514.879150	346159.991358	346153.986090	346153.986090	344872.645721
East Grid	1850499.075403	1850499.075403	1850998.406598	1850876.550619	1850884.715134	1851203.747789	1851202.733150	1851202.733150	1851019.123350
SAS PARAMETER	FINAL	PRELIMINARY	FINAL	PRELIMINARY			PRELIMINARY	PRELIMINARY	
	ug/l	ug/l	ug/l	ug/l			ug/l	ug/l	
Chloride	NOT REPORTED	990000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	3000	NOT REPORTED
Sulfate	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Nitrate	NOT REPORTED	400	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	120000	NOT REPORTED
TOC	600000	1200000	2000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	9600	NOT REPORTED
BOD	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
COD	NOT REPORTED	3900000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	13000	NOT REPORTED
Alkalinity, pht	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	110000	NOT REPORTED
Alkalinity (CaCO3)	NOT REPORTED	260000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	170000	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	50000	NOT REPORTED
Phosphorus, Total	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, bicarbonate	NOT REPORTED	260000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Alkalinity, carbonate	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	120000	NOT REPORTED
Ammonia	NOT REPORTED	67000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	300	NOT REPORTED
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	13000	NOT REPORTED
Petroleum Hydrocarbons	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TSS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride, soluble (F)	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	200	NOT REPORTED
Total P	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Halogen(TOX)	REJECTED	65000	9	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
pH	NOT REPORTED	5300	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	10900	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	87000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	13000	NOT REPORTED
2,4,0 (DW)	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	9.6	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	2410000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	225000	NOT REPORTED
Solids, Suspended	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Specific Conductance,25C	NOT REPORTED	umho/cm3 2900	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	umho/cm3 310	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-4S	X-4S	X-5S	X-6S	X-6D	X-7S	X-7D	X-7D	X-8S
Sample Code	XS 104	XS 204	XS 105	XS 106	XD 106	XS 107	XD 107	XD 207	XS 108
Inorganic Sample #	MBA 477		MB 992	MB 991	MB 996	MB 995	MBA 466		MBD 993
Organic Sample #	B 4192		B 4182	B 4184	B 4183	B 4185	B 4186		B 4187
Date Sampled	12/6/84	01/03/85	12/4/84	12/4/84	12/4/84	12/5/84	12/5/84	01/03/85	12/5/84
Date Shipped	12/6/84	01/03/85	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85	12/6/84
Date Shipped									
North Grid	345192.425518	345192.425518	343767.259282	343513.128954	343514.879150	346159.991358	346153.986090	346153.986090	344072.645721
East Grid	1850499.075403	1850499.075403	1850998.406598	1850876.550619	1850884.715134	1851203.747789	1851202.733150	1851202.733150	1851019.123350
ORGANICS --------									
VOLATILE --------	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
methylene chloride	9200	11000	UNDETECTED	UNDETECTED	6	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
acetone	140000	44000	UNDETECTED	81	UNDETECTED	J 3	42	32	UNDETECTED
trans-1,2-dichloroethene	21000	29000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-dichloroethane	13000	26000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	7900	8400	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2,2-terachloroethane	20000	22000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
trichloroethene	9500	19000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
vinyl chloride	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzene	3300	2900	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-methyl-2-pentanone	UNDETECTED	130000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	6100	13000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
toluene	61000	100000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-butanone	52000	43000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-hexanone	89000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethylbenzene	J 4200	5400	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Total Xylenes	18000	21000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
SEMIVOLATILE ------------	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Phenol	3800	14000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
bis(-2-Chloroethyl)Ether	2200	3200	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	650	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	940	330	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-Methylphenol	630	1500	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
isophorone	1200	2000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-methylphenol	UNDETECTED	240	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzoic Acid	2100	5300	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	280	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 10	UNDETECTED
bis(2-Ethylhexyl)Phthalate	UNDETECTED	250	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	16	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
naphthalene	J 220	120	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzyl alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Phenanthrene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-4S	X-4S	X-5S	X-6S	X-6D	X-7S	X-7D	X-7D	X-8S
Sample Code	XS 104	XS 204	XS 105	XS 106	XD 106	XS 107	XD 107	XD 207	XS 108
Inorganic Sample #	MBA 477		MB 992	MB 991	MB 996	MB 995	MBA 466		MBO 993
Organic Sample #	B 4192		B 4182	B 4184	B 4183	B 4185	B 4186		B 4187
Date Sampled	12/6/84	01/03/85	12/4/84	12/4/84	12/4/84	12/5/84	12/5/84	01/03/85	12/5/84
Date Shipped	12/6/84	01/03/85	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85	12/6/84
Date Shipped									
North Grid	345192.425518	345192.425518	343767.259282	343513.128954	343514.879150	346159.991358	346153.986090	346153.986090	344872.645721
East Grid	1850499.075403	1850499.075403	1850998.406598	1850876.550619	1850884.715134	1851203.747789	1851202.733150	1851202.733150	1851019.123350
PESTICIDE ---------		FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Endosulfan 1	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma BHC (Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alph-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfate II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS -------------------------------	PRELIMINARY ug/l	FINAL ug/l						FINAL ug/l	
2-Pentanone,4-Methyl-	J 20000	J 20000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzene,Methyl-	J 38	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzene,1,4-Dimethyl-	J 670	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzene,1,4-Dimethyl-	J 440	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Pentanoicacid	J 29	J 20000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanoicacid,2-Methyl-	J 56	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanoicacid,2-Ethyl-	UNDETECTED	J 4000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzeneaceticacid	J 41	J 4000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Ethane,1,2-Bis(2-Chloroethoxy)-	UNDETECTED	J 2000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,3,5-Trazine-2,4-Diamme, 6-Phenyl	10	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Formamide,N,N-Dimethyl-	UNDETECTED	J 9000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanoicacid	UNDETECTED	J 3000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanedioicacid,Dioctylester	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	J 50	NOT REPORTED
4-Methyl-4-Hydroxy-2-Pentanone	UNDETECTED	J 20000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Butanoicacid	UNDETECTED	J 10000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,5-Cyclooctadiene,(E,Z)-	UNDETECTED	J 800	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Cyclohexanone,3,3,5-Trimethyl-	UNDETECTED	J 3000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED
3,8-Nonadien-2-one,(E)-	UNDETECTED	J 1000	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-9S	X-10S	X-11S	X-12S	Field Blank	Field Blank	Trip Blank	WE-6	WE-7
Sample Code	XS 109	XS 110	XS 111	XS 112	XS 113FB	XS 213FB	XS 213TB	WE-106	WE-107
Inorganic Sample #	MBA 469	MBA 476	MBA 475	MBA 474	MBA 479			MBA 480	MBA 481
Organic Sample #	B 4198	B 4191	B 4190	B 4189	B 4194			B 4199	B 4200
Date Sampled	12/5/84	12/5/84	12/5/84	12/6/84	12/6/84	01/03/85		12/10/84	12/10/84
Date Shipped	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85		12/11/84	12/11/84
Date Shipped									
North Grid	344317.236314	346330.928925	345620.476460	344666.248215				344534.191509	344363.126992
East Grid	1051543.121726	1049432.842483	1049300.197536	1049117.037985				1050870.414761	1050872.022809
FIELD PARAMETERS									
Flow (gpm)	0.7	1.7	1.9	1.8	NOT MEASURED	NOT MEASURED	NOT MEASURED	0.5	0.4
Temp. (Celsius)	13.5	12.8	12.0	11.9	NOT MEASURED	NOT MEASURED	NOT MEASURED	15.0	17.2
pH	5.32	4.83	4.86	4.63	NOT MEASURED	NOT MEASURED	NOT MEASURED	6.03	4.13
Specific Conductivity (umho/cm)	85	130	183	140	NOT MEASURED	NOT MEASURED	NOT MEASURED	1120	700
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l		FINAL ug/l	FINAL ug/l
Aluminum	429	3100	773	4150	UNDETECTED	UNDETECTED	NOT REPORTED	96	1190
Antimony	UNDETECTED	UNDETECTED	66	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	62	73
Arsenic	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	16	UNDETECTED
Barium	[79]	212	320	362	UNDETECTED	UNDETECTED	NOT REPORTED	39	272
Beryllium	[0.6]	UNDETECTED	UNDETECTED	[0.9]	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	9.9
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	7.8	10
Calcium	6880	8040	10000	9050	UNDETECTED	[400]	NOT REPORTED	9500	36700
Chromium	[7.8]	28	15	44	UNDETECTED	UNDETECTED	NOT REPORTED	12	17
Cobalt	[9.1]	[8.9]	[9.7]	[39]	UNDETECTED	UNDETECTED	NOT REPORTED	24	73
Copper	[16]	[9.9]	[16]	[13]	UNDETECTED	UNDETECTED	NOT REPORTED	14	26
Iron	1670	8380	1530	15900	[10]	[70]	NOT REPORTED	52200	217000
Lead	[2.1]	7.5	6.8	6.6	UNDETECTED	[4]	NOT REPORTED	UNDETECTED	71
Cyanide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Magnesium	5900	12400	21100	16500	UNDETECTED	[19]	NOT REPORTED	15100	20100
Manganese	206	139	90	511	UNDETECTED	UNDETECTED	NOT REPORTED	2600	439
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Nickel	[28]	[29]	[26]	[29]	UNDETECTED	UNDETECTED	NOT REPORTED	15	219
Potassium	[2140]	7740	8460	8460	UNDETECTED	[40]	NOT REPORTED	19600	11400
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	8.1	20
Sodium	REJECTED	REJECTED	REJECTED	REJECTED	[4830]	UNDETECTED	NOT REPORTED	342000	19300
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	[6]	NOT REPORTED	UNDETECTED	UNDETECTED
Vanadium	[6.8]	[25]	UNDETECTED	[46]	UNDETECTED	UNDETECTED	NOT REPORTED	17	[33]
Zinc	100	52	64	70	UNDETECTED	UNDETECTED	NOT REPORTED	256	423
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-9S	X-10S	X-11S	X-12S	Field Blank	Field Blank	Trip Blank	WE-6	WE-7
Sample Code	XS 109	XS 110	XS 111	XS 112	XS 113FB	XS 213FB	XS 213TB	WE-106	WE-107
Inorganic Sample #	MBA 469	MBA 476	MBA 475	MBA 474	MBA 479			MBA 480	MBA 481
Organic Sample #	B 4190	B 4191	B 4190	B 4189	B 4194			B 4199	B 4200
Date Sampled	12/5/84	12/5/84	12/5/84	12/6/84	12/6/84	01/03/85		12/10/84	12/10/84
Date Shipped	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85		12/11/84	12/11/84
Date Shipped									
North Grid	344317.236314	346330.928925	345628.476460	344666.248215				344534.191509	344363.126932
East Grid	1851543.121726	1849432.842483	1849300.197536	1849117.037985				1850878.414761	1850872.022809
SAS PARAMETER -------------		FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l		FINAL ug/l	FINAL ug/l
Chloride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Nitrate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TOC	NOT REPORTED	3000	2000	4000	2000	UNDETECTED	NOT REPORTED	53000	1000
BOD	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
COD	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	35000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	2000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	2000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Ammonia	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TSS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride, soluble (F)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Total P	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Halogen(TOX)	NOT REPORTED	14	6	11	UNDETECTED	UNDETECTED	NOT REPORTED	330	170
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	5500	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	1600	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,0 (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	5000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids, Suspended	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	24	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-9S	X-10S	X-11S	X-12S	Field Blank	Field Blank	Trip Blank	WE-6	WE-7
Sample Code	XS 109	XS 110	XS 111	XS 112	XS 113FB	XS 213FB	XS 213TB	WE-106	WE-107
Inorganic Sample #	MBA 469	MBA 476	MBA 475	MBA 474	MBA 479			MBA 480	MBA 481
Organic Sample #	B 4198	B 4191	B 4190	B 4189	B 4194			B 4199	B 4200
Date Sampled	12/5/84	12/5/84	12/5/84	12/6/84	12/6/84	01/03/85		12/10/84	12/10/84
Date Shipped	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85		12/11/84	12/11/84
Date Shipped									
North Grid	344317.236314	346330.928925	345620.476460	344666.248215				344534.191509	344363.126992
East Grid	1851543.121726	1849432.842483	1849300.197536	1849117.037985				1850078.414761	1850072.022009
ORGANICS									
VOLATILE	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	19	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	4	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
methylene chloride	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	5	31
acetone	UNDETECTED	27	15	41	24	35	31	12	UNDETECTED
trans-1,2-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	8	UNDETECTED
1,2-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	7	100
1,1,1-trichloroethane	UNDETECTED	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2,2-terachloroethane	UNDETECTED	22	22	UNDETECTED	UNDETECTED	J 5	UNDETECTED	UNDETECTED	UNDETECTED
chloroethane	UNDETECTED	22	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
trichloroethene	UNDETECTED	22	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	3	UNDETECTED
vinyl chloride	UNDETECTED	22	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	13	UNDETECTED
benzene	UNDETECTED	22	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	20	UNDETECTED
4-methyl-2-pentanone	UNDETECTED	22	22	UNDETECTED	UNDETECTED	J 13	UNDETECTED	UNDETECTED	UNDETECTED
fluorotrichloromethane	UNDETECTED	22	22	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	UNDETECTED	J 5	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
toluene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	13	UNDETECTED	3	UNDETECTED
2-butanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	18	UNDETECTED	UNDETECTED	UNDETECTED
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Ethylbenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	3	UNDETECTED
Total Xylenes	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	E 5	UNDETECTED	8	UNDETECTED
SEMIVOLATILE	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/i	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Phenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	34	39	NOT REPORTED	UNDETECTED	UNDETECTED
bis(-2-Chloroethyl)Ether	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	17	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	12	UNDETECTED
4-Methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	J 10	NOT REPORTED	UNDETECTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
benzyl alcohol	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Phenanthrene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
GROUNDWATER QUALITY ANALYTICAL RESULTS

Sample Location	X-9S	X-10S	X-11S	X-12S	Field Blank	Field Blank	Trip Blank	WE-6	WE-7
Sample Code	XS 109	XS 110	XS 111	XS 112	XS 113FB	XS 213FB	XS 213TB	WE-106	WE-107
Inorganic Sample #	MBA 469	MBA 476	MBA 475	MBA 474	MBA 479			MBA 480	MBA 481
Organic Sample #	B 4190	B 4191	B 4190	B 4189	B 4194			B 4199	B 4200
Date Sampled	12/5/84	12/5/84	12/5/84	12/6/84	12/6/84	01/03/85		12/10/84	12/10/84
Date Shipped	12/6/84	12/6/84	12/6/84	12/6/84	12/6/84	01/03/85		12/11/84	12/11/84
Date Shipped									
North Grid	344317.236314	346330.928925	345628.476460	344666.240215				344534.191509	344363.126992
East Grid	1851543.121726	1849432.842483	1849300.197536	1849117.037985				1850078.414761	1850872.022009
PESTICIDE	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
Endosulfan 1	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Gamma BHC (Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Alph-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Endosulfate II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS					PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
Ethanol,2-butoxy-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	J 19	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Cyclohexanone,3,3,5-Trimethyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	33	UNDETECTED
Benzenesulfonamide,N,N,4-Tri methyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Furan,Tetahydro-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 52
Butane,2,2-Dichloro-3-Methyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	69	J 33
Cyclopropane,Tetramethyl Propylidene-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 13
9H-Xanthen-9-One,4-Hydroxy-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 54
Hexane	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	7	UNDETECTED
1-Hexanol,3-Methyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	23	UNDETECTED
Hexanoicacid,3,5,5-Trimethyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	22	UNDETECTED
2H-Azepin-2-one,Hexahydro-4 -Methyl-	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	71	UNDETECTED
Pentanedioicacid,Bis(1-Methyl propyl)Ester	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	56	UNDETECTED
Benzenepropanoicacid,.Beta., 2,4-Trimethyl-,Methylest	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	NOT REPORTED	20	UNDETECTED

TABLE 6-1

NJDEP Hazardous Site Mitigation Administration
Air Monitoring Program at Helen Kramer Landfill
October 31, to November 2, 1983*

Compound	Leachate Seep Area ppb	Site Mean Value ppb
vinylidene chloride	40.0	38.9
methylene chloride	29.6	12.3
chloroprene	ND	ND
chloroform	1.96	0.82
1,2-dichloroethane	ND	0.36
1,1,1-trichloroethane	6.48	2.61
benzene	16.2	7.51
carbon tetrachloride	0.08	0.12
trichloroethylene	9.37	2.43
dioxane	ND	0.01
1,1,2-trichloroethane	2.88	1.22
toluene	137	46.5
1,2-dibromoethane	ND	0.47
tetrachloroethylene	5.49	1.91
chlorobenzene	1.06	0.80
ethylbenzene	6.65	3.85
m,p-xylene	14.6	7.43
styrene	0.61	1.53
o-xylene	3.13	2.31
1,1,2,2-tetrachloroethane	0.02	0.78
o-chlorotoluene	0.44	0.50
p-chlorotoluene	0.63	0.36
p-dichlorobenzene	0.42	0.54
o-dichlorobenzene	0.63	0.86
nitrobenzene	0.14	0.54
napthalene	0.09	0.30

ND - Not Detected (reported by NJDEP HSMA as zeros)

(All values are three-day mean concentrations)

* From Gianti, et. al. 1984

HELEN KRAMER LANDFIL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-1	C-1	C-2	C-2	C-2	C-2	C-3	C-3
Sample Code	CW 101	CW 201	CW 102	CW 202	CW 102 DUP.	CW 202 DUP.	CW 103	CW 203
Inorganic Sample #	MB 0021	MBA 225	MB 0014	MBA 226	MB 0015	MBA 223	MB 0075	MBA 219
Organic Sample #	B 3205	BA 257	B 3203	BA 258	B 3204	BA 255	B 2248	BA 251
Date Sampled	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84	08/31/84	12/12/84
Date Shipped	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84	08/31/84	12/13/84
Date Shipped			09/05/84		09/05/84		09/05/84	
North Grid	349159.263869	349159.263869	347357.842755	347357.842755	347357.842755	347357.842755	346769.883845	346769.883845
East Grid	1849355.886981	1849355.886981	1850624.880193	1850624.880193	1850624.880193	1850624.880193	1850435.845757	1850435.845757
SAG PARAMETER	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	54500	41000	52000	45000	54	41000	UNDETECTED	43000
Sulfate	22000	29000	22000	30000	22.5	29000	20300	30000
Nitrate	14000	R 1200	10500	R 1100	5.4	R 1100	UNDETECTED	R 1200
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	202000	NOT REPORTED	40000	NOT REPORTED	204	NOT REPORTED	NOT REPORTED	NOT REPORTED
TOC	20000	14000	16000	REJECTED	20	REJECTED	20	REJECTED
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	NOT REPORTED	REJECTED
COD	42300	28000	34600	31000	32.7	31000	57	45000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	NOT REPORTED
Ammonia	4060	1300	1050	1300	54000	1500	1570	1600
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	22500	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	5400	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	3000	UNDETECTED	NOT REPORTED
TSS	13000	NOT REPORTED	21000	NOT REPORTED	20000	NOT REPORTED	NOT REPORTED	NOT REPORTED
Total P	62	NOT REPORTED	104	NOT REPORTED	204000	NOT REPORTED	15	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	20000	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	32700	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	124000	NOT REPORTED	145000	NOT REPORTED	181000	NOT REPORTED	180000
Solids, Suspended	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-1	C-1	C-2	C-2	C-2	C-2	C-3	C-3
Sample Code	CW 101	CW 201	CW 102	CW 202	CW 102 DUP.	CW 202 DUP.	CW 103	CW 203
Inorganic Sample #	MB 0021	MBA 225	MB 0014	MBA 226	MB 0015	MBA 223	MB 0075	MBA 219
Organic Sample #	B 3285	BA 257	B 3283	BA 258	B 3284	BA 255	B 2248	BA 251
Date Sampled	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84	08/31/84	12/12/84
Date Shipped	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84	08/31/84	12/13/84
Date Shipped			09/05/84		09/05/84		09/05/84	
North Grid	349159.263869	349159.263869	347357.842755	347357.842755	347357.842755	347357.842755	346769.803845	346769.803845
East Grid	1849355.806981	1849355.806981	1850624.080193	1850624.080193	1850624.080193	1850624.080193	1850435.045757	1850435.045757
FIELD PARAMETERS								
Flow (gpm)	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	3600	9000
Temp. (Celsius)	22.5	7.3	22.25	7.0	NOT MEASURED	NOT MEASURED	21	11.5
pH	6.22	6.65	6.45	6.51	NOT MEASURED	NOT MEASURED	6.50	6.00
Specific Conductivity (umho/cm)	200	152	295	155	NOT MEASURED	NOT MEASURED	299	139
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	204	600	262	600	200	800	230	700
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Barium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	17000	NOT REPORTED	16000	NOT REPORTED	17000	NOT REPORTED	17000
Chromium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cobalt	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Copper	50	UNDETECTED	UNDETECTED	UNDETECTED	50	UNDETECTED	UNDETECTED	UNDETECTED
Iron	7020	5750	6470	6800	7240	6900	7650	5500
Lead	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyanide	UNDETECTED	S 30	UNDETECTED	UNDETECTED	UNDETECTED	30	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Manganese	230	210	242	210	252	220	212	200
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	UNDETECTED	[30]	UNDETECTED	[20]	UNDETECTED	[30]	UNDETECTED	40
Potassium	NOT REPORTED	5000	NOT REPORTED	5000	NOT REPORTED	[4000]	NOT REPORTED	[4000]
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	26000
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	R 100
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Zinc	REJECTED	30	940	30	REJECTED	40	195	20
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED

HELEN KRAMER LANDFIL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-1	C-1	C-2	C-2	C-2	C-2	C-3	C-3
Sample Code	CW 101	CW 201	CW 102	CW 202	CW 102 DUP.	CW 202 DUP.	CW 103	CW 203
Inorganic Sample #	MD 0021	MBA 225	MD 0014	MBA 226	MD 0015	MBA 223	MD 0075	MBA 219
Organic Sample #	B 3205	BA 257	B 3203	BA 258	B 3204	BA 255	B 2248	BA 251
Date Sampled	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84	08/31/84	12/12/84
Date Shipped	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84	08/31/84	12/13/84
Date Shipped			09/05/84		09/05/84		09/05/84	
North Grid	349159.263869	349159.263869	347357.042755	347357.042755	347357.042755	347357.042755	346769.083045	346769.083045
East Grid	1049355.086981	1049355.086981	1050624.000193	1050624.000193	1050624.000193	1050624.000193	1050435.045757	1050435.045757
ORGANICS								
Volatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	2.2	NOT REPORTED	UNDETECTED	NOT REPORTED	3.3	NOT REPORTED	REJECTED	NOT REPORTED
chloroform	4.9	NOT REPORTED	3.4	NOT REPORTED	5.5	NOT REPORTED	REJECTED	NOT REPORTED
1,1-dichloroethane	2.3	NOT REPORTED	1.6	NOT REPORTED	2.0	NOT REPORTED	REJECTED	NOT REPORTED
1,1,2-trichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	1.0	NOT REPORTED	REJECTED	NOT REPORTED
1,1-dichloroethene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	15	NOT REPORTED	REJECTED	NOT REPORTED
methylene chloride	42	NOT REPORTED	REJECTED	NOT REPORTED	42	NOT REPORTED	REJECTED	NOT REPORTED
acetone	510	NOT REPORTED	610	NOT REPORTED	300	NOT REPORTED	REJECTED	NOT REPORTED
trans-1,2-dichloroethene	15	NOT REPORTED	9.2	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
1,2-dichloroethane	67	NOT REPORTED	52	NOT REPORTED	60	NOT REPORTED	REJECTED	NOT REPORTED
1,2-dichloropropane		NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
1,1,1-trichloroethane	3.3	NOT REPORTED	2.2	NOT REPORTED	3.7	NOT REPORTED	REJECTED	NOT REPORTED
1,1,2,2-tetachloroethane	4.3	NOT REPORTED	3.9	NOT REPORTED	5.6	NOT REPORTED	REJECTED	NOT REPORTED
chloroethane	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
trichloroethene	7.1	NOT REPORTED	5	NOT REPORTED	7.3	NOT REPORTED	REJECTED	NOT REPORTED
vinyl chloride	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
benzene	7.9	NOT REPORTED	REJECTED	NOT REPORTED	9.5	NOT REPORTED	REJECTED	NOT REPORTED
4-methyl-2-pentanone	240	NOT REPORTED	130	NOT REPORTED	250	NOT REPORTED	REJECTED	NOT REPORTED
fluorotrichloromethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
tetrachloroethene	2.1	NOT REPORTED	UNDETECTED	NOT REPORTED	2.7	NOT REPORTED	REJECTED	NOT REPORTED
toluene	90	NOT REPORTED	REJECTED	NOT REPORTED	120	NOT REPORTED	REJECTED	NOT REPORTED
2-butanone	100	NOT REPORTED	82	NOT REPORTED	140	NOT REPORTED	REJECTED	NOT REPORTED
2-hexanone	2.0	NOT REPORTED	UNDETECTED	NOT REPORTED	4.7	NOT REPORTED	REJECTED	NOT REPORTED
ethylbenzene	6.9	NOT REPORTED	4.4	NOT REPORTED	0.9	NOT REPORTED	REJECTED	NOT REPORTED
Total Xylenes	11	NOT REPORTED	9.6	NOT REPORTED	17	NOT REPORTED	REJECTED	NOT REPORTED
Semivolatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Phenol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
bis(2-chloroethyl)ether	74	NOT REPORTED	69	NOT REPORTED	70	NOT REPORTED	70	NOT REPORTED
1,4-dichlorobenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzyl Alcohol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,2-Dichlorobenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
4-Methylphenol	15	NOT REPORTED	UNDETECTED	NOT REPORTED	0.9	NOT REPORTED	UNDETECTED	NOT REPORTED
isophorone	30	NOT REPORTED	27	NOT REPORTED	31	NOT REPORTED	32	NOT REPORTED
2-methylphenol	7.5	NOT REPORTED	55	NOT REPORTED	7.3	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzoic Acid	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Di-n-Butylphthalate	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	K 10	NOT REPORTED
bis(2-Ethylhexyl)Phthalate	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	K 10	NOT REPORTED
Di-n-Octyl Phthalate	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
naphthalene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
diethyl phthalate	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED

HELEN KRAMER LANDFIL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-1	C-1	C-2	C-2	C-2	C-2	C-3	C-3
Sample Code	CW 101	CW 201	CW 102	CW 202	CW 102 DUP.	CW 202 DUP.	CW 103	CW 203
Inorganic Sample #	MB 0021	MBA 225	MB 0014	MBA 226	MB 0015	MBA 223	MB 0075	MBA 219
Organic Sample #	B 3285	BA 257	B 3283	BA 258	B 3284	BA 255	B 2240	BA 251
Date Sampled	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84	08/31/84	12/12/84
Date Shipped	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84	08/31/84	12/13/84
Date Shipped			09/05/84		09/05/84		09/05/84	
North Grid	349159.263869	349159.263869	347357.842755	347357.842755	347357.842755	347357.842755	346769.883845	346769.883845
East Grid	1049355.886981	1049355.886981	1050624.080193	1050624.080193	1050624.080193	1050624.080193	1050435.045757	1050435.045757
Pesticide	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan I	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	0.050	REJECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Gamma-BHC(Lindene)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Delta-BHC	UNDETECTED	0.400	UNDETECTED	0.400	UNDETECTED	0.300	REJECTED	0.400
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan II	UNDETECTED	UNDETECTED	UNDETECTED	0.100	UNDETECTED	0.100	REJECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Alpha Endosulfan	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Ethane,1,2-Bis(2-Chloroethoxy)-	170	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanoicacid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	61	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	29	NOT REPORTED	5.2	NOT REPORTED	13	NOT REPORTED	J 54	NOT REPORTED
Unknown	UNDETECTED	NOT REPORTED	20	NOT REPORTED	36	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	UNDETECTED	NOT REPORTED	12	NOT REPORTED	165	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	UNDETECTED	NOT REPORTED	29	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	UNDETECTED	NOT REPORTED	9.3	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Methane Dimethoxy	25	NOT REPORTED	UNDETECTED	NOT REPORTED	25	NOT REPORTED	UNDETECTED	NOT REPORTED
Ethane, 1,1-oxybis(2-chloro)	9.1	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
2-Hexanol	93	NOT REPORTED	52	NOT REPORTED	97	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown Carboxylic Acid	UNDETECTED	NOT REPORTED	11	NOT REPORTED	7.7	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown Carboxylic Acid	UNDETECTED	NOT REPORTED	5.9	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Silicone	UNDETECTED	NOT REPORTED	78	NOT REPORTED	85	NOT REPORTED	UNDETECTED	NOT REPORTED
2-Hexanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	216	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown Ketone	210	NOT REPORTED	119	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Methyl Benzene	UNDETECTED	NOT REPORTED	13	NOT REPORTED	73	NOT REPORTED	UNDETECTED	NOT REPORTED
2-Pentanol,-4 Methyl	16	NOT REPORTED	9.3	NOT REPORTED	18	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown Alkene	6.8	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
xylene	UNDETECTED	NOT REPORTED	8.7	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED

HELEN KRAMER LANDFIL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-1	C-1	C-2	C-2	C-2	C-2	C-3	C-3
Sample Code	CW 101	CW 201	CW 102	CW 202	CW 102 DUP.	CW 202 DUP.	CW 103	CW 203
Inorganic Sample #	MB 0021	MBA 225	MB 0014	MBA 226	MB 0015	MBA 223	MB 0075	MBA 219
Organic Sample #	B 3285	BA 257	B 3283	BA 258	B 3284	BA 255	B 2240	BA 251
Date Sampled	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84	08/31/84	12/12/84
Date Shipped	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84	08/31/84	12/13/84
Date Shipped		.	09/05/84		09/05/84		09/05/84	
North Grid	349159.263869	349159.263869	347357.842755	347357.842755	347357.842755	347357.842755	346769.883845	346769.883845
East Grid	1849355.886981	1849355.886981	1850624.080193	1850624.080193	1850624.080193	1850624.080193	1850435.045757	1850435.045757
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
4,4'-methylene bis phenol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	6.6	NOT REPORTED	UNDETECTED	NOT REPORTED
2-Propanol	5.0	NOT REPORTED	UNDETECTED	NOT REPORTED	7.1	NOT REPORTED	J 7	NOT REPORTED
Non ortho xylene	16	NOT REPORTED	UNDETECTED	NOT REPORTED	15	NOT REPORTED	UNDETECTED	NOT REPORTED
C4H20	3.4	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Acetamide,N,N-Dimethyl	38	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzenealetic Acid	19	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Phenol,4,4'Methyenbis	7.2	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Hyanedisic Acid,Dioctyl Ester	11	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Alkene	UNDETECTED	NOT REPORTED	3.5	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Alkene	UNDETECTED	NOT REPORTED	43	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,2-Bis(2-Chloroethoxy)Ethane	UNDETECTED	NOT REPORTED	143	NOT REPORTED	12	NOT REPORTED	J 140	NOT REPORTED
Dioctylester,Hexanedioic Acid	UNDETECTED	NOT REPORTED	11	NOT REPORTED	0.5	NOT REPORTED	UNDETECTED	NOT REPORTED
9-Octadeconamide	REJECTED	NOT REPORTED	31	NOT REPORTED	40	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzoicacid,4Methyl	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	18	NOT REPORTED	J 20	NOT REPORTED
dimethoxymethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 4	NOT REPORTED
methylester of 2-butenoic acid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 9	NOT REPORTED
C6 alcohol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 6	NOT REPORTED
1,3-dimethylbenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 32	NOT REPORTED
3,3,5-Trimethylcyclohexanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 19	NOT REPORTED
3,3,5-Trimethylcyclohexanol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 2	NOT REPORTED
1-Phenylethanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
4-(1-methylethyl)benzoic acid	UNDETECTED	NOT REPORTED	13	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
C4 H20	3.4	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Toluene	67	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED

G3

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-4	C-4	C-5	C-5	C-6	C-6	C-7	C-7
Sample Code	CW 104	CW 204	CW 105	CW 205	CW 106	CW 206	CW 107	CW 207
Inorganic Sample #	MB 0017	MBA 210	MB 0010	MBA 228	MB 0069	MBA 229	MB 0067	MBA 230
Organic Sample #	B 3275	BA 242	B 3271	BA 260	B 3276	BA 261	B 3286	BA 262
Date Sampled	08/29/84	12/11/84	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	345301.620006	345301.620006	343627.956200	343627.956200	343166.015740	343166.015740	343256.026662	343256.026662
East Grid	1050638.013006	1050638.013006	1051247.794224	1051247.794224	1051042.075602	1051042.075602	1051191.520154	1051191.520154
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	30000	20000	11500	920000	10000	12000	12000	13000
Sulfate	22000	29000	26300	260000	7500	13000	27000	34000
Nitrate	1000	R 1200	2900	R 6500	10700	R 1600	12100	R 1100
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	136000	NOT REPORTED	142000	NOT REPORTED	40000	NOT REPORTED	102000	NOT REPORTED
TOC	7500	REJECTED	3000	173000	4000	REJECTED	3000	REJECTED
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	17300	11000	UNDETECTED	713000	UNDETECTED	11000	5000	UNDETECTED
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Ammonia	UNDETECTED	900	UNDETECTED	7500	1260	100	1510	200
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TSS	14000	NOT REPORTED	6000	NOT REPORTED	7000	NOT REPORTED	6000	NOT REPORTED
Total P	152	NOT REPORTED	UNDETECTED	NOT REPORTED	14	NOT REPORTED	104	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	112000	NOT REPORTED	2000000	NOT REPORTED	100000	NOT REPORTED	176000
Solids, Suspended	NOT REPORTED	UNDETECTED	NOT REPORTED	114000	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-4	C-4	C-5	C-5	C-6	C-6	C-7	C-7
Sample Code	CW 104	CW 204	CW 105	CW 205	CW 106	CW 206	CW 107	CW 207
Inorganic Sample #	MB 0017	MBA 210	MB 0010	MBA 228	MB 0869	MBA 229	MB 0867	MBA 230
Organic Sample #	B 3275	BA 242	B 3271	BA 260	B 3276	BA 261	B 3286	BA 262
Date Sampled	08/29/84	12/11/84	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	345301.620006	345301.620006	343627.956200	343627.956200	343166.015740	343166.015740	343256.026662	343256.026662
East Grid	1850630.813006	1850630.813006	1851247.734224	1851247.734224	1851042.875602	1851042.875602	1851191.528154	1851191.528154
FIELD PARAMETERS								
Flow (gpm)	2700	9000	1800	NOT MEASURED	500	NOT MEASURED	1800	4500
Temp. (Celsius)	19.5	8	19.5	7.0	22.9	5.5	13.25	7.2
pH	6.76	7.09	6.05	6.79	6.14	6.91	NOT MEASURED	6.68
Specific Conductivity (umho/cm)	210	125	142	72	88	52	140	95
INORGANICS	FINAL	FINAL	FINAL	FINAL	FINAL	FINAL	FINAL	FINAL
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Barium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beryllium	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	15000	NOT REPORTED	15000	NOT REPORTED	6000	NOT REPORTED	16000
Chromium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cobalt	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Copper	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Iron	4420	2400	2260	2020	REJECTED	2190	2035	1850
Lead	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyanide	UNDETECTED	UNDETECTED	UNDETECTED	10	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Manganese	175	150	64	80	62	70	60	80
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Potassium	NOT REPORTED	[4000]	NOT REPORTED	[4000]	NOT REPORTED	[3000]	NOT REPORTED	(4000)
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	R 200	UNDETECTED	R 170	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Zinc	REJECTED	20	REJECTED	60	UNDETECTED	[10]	REJECTED	30
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-4	C-4	C-5	C-5	C-6	C-6	C-7	C-7
Sample Code	CW 104	CW 204	CW 105	CW 205	CW 106	CW 206	CW 107	CW 207
Inorganic Sample #	MD 0017	MBA 210	MD 0010	MBA 228	MD 0069	MBA 229	MD 0067	MBA 230
Organic Sample #	B 3275	BA 242	B 3271	BA 260	B 3276	BA 261	B 3206	BA 262
Date Sampled	08/29/84	12/11/84	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	345301.620006	345301.620006	343627.956200	343627.956200	343166.015740	343166.015740	343256.026662	343256.026662
East Grid	1050630.013006	1050630.013006	1051247.794224	1051247.794224	1051042.075602	1051042.075602	1051191.520154	1051191.520154
ORGANICS								
Volatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
methylene chloride	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
acetone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
trans-1,2-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,2-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,2-dichloropropane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,2,2-tetachloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
chloroethane	REJECTED	UNDETECTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
trichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
vinyl chloride	REJECTED	UNDETECTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
benzene	REJECTED	J,B 2	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
4-methyl-2-pentanone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
tetrachloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
toluene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
2-butanone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
ethylbenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Total Xylenes	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Semivolatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	UNDETECTED	UNDETECTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Phenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
bis(2-chloroethyl)ether	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
4-Methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzoic Acid	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Di-n-Butylphthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
bis(2-Ethylhexyl)Phthalate	REJECTED	UNDETECTED	REJECTED	NOT REPORTED	87	NOT REPORTED	REJECTED	NOT REPORTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED

G5

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-4	C-4	C-5	C-5	C-6	C-6	C-7	C-7
Sample Code	CW 104	CW 204	CW 105	CW 205	CW 106	CW 206	CW 107	CW 207
Inorganic Sample #	MB 0017	MBA 210	MB 0010	MBA 228	MB 0069	MBA 229	MB 0067	MBA 230
Organic Sample #	B 3275	BA 242	B 3271	BA 260	B 3276	BA 261	B 3286	BA 262
Date Sampled	08/29/84	12/11/84	08/27/84	12/12/84	08/27/84	12/12/84	08/27/84	12/12/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/13/84	08/28/84	12/13/84	08/28/84	12/13/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	345301.620006	345301.620006	343627.956200	343627.956200	343166.015740	343166.015740	343256.026662	343256.026662
East Grid	1850638.813006	1850638.813006	1851247.794224	1851247.794224	1851042.075602	1851042.075602	1851191.528154	1851191.528154
Pesticide	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan I	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindene)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha Endosulfan	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Unknown	35	UNDETECTED	31	NOT REPORTED	30	NOT REPORTED	23	NOT REPORTED
Unknown	UNDETECTED	UNDETECTED	7.1	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	UNDETECTED	UNDETECTED	15	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown Alkene	24	UNDETECTED	9.5	NOT REPORTED	8.4	NOT REPORTED	8.3	NOT REPORTED
Hexanedioic Acid Diodylestr	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	22	NOT REPORTED	UNDETECTED	NOT REPORTED
9-Octadoconamide	190	UNDETECTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
1-butanol,3-methyl-Acetate	13	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
Cyclohexane,Methyl	UNDETECTED	UNDETECTED	10	NOT REPORTED	11	NOT REPORTED	9.2	NOT REPORTED
hexamethylcyclotrisiloxone	UNDETECTED	200	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
9-Octadecen	UNDETECTED	UNDETECTED	29	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-12	C-12	Field Blank	Field Blank	Trip Blank
Sample Code	CW 112	CW 112 DUP.	CW 213FBA	CW 213FBB	CW 214TB
Inorganic Sample #	MB 0013	MB 0071	MBA 218	MBA 224	MBA 217
Organic Sample #	B 3202	B 2251	BA 250	BA 256	BA 249
Date Sampled	08/27/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	08/28/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	09/05/84	09/05/84			
North Grid					
East Grid					
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	1000	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sulfate	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nitrate	6500	1200	UNDETECTED	UNDETECTED	UNDETECTED
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	60000	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TOC	UNDETECTED	UNDETECTED	3000	3000	2000
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	9600	18300	UNDETECTED	UNDETECTED	UNDETECTED
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	NOT REPORTED	R 200	300	R 300
Ammonia	450	UNDETECTED	UNDETECTED	UNDETECTED	1100
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TSS	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Total P	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	NOT REPORTED	UNDETECTED	9000	UNDETECTED
Solids, Suspended	NOT REPORTED	NOT REPORTED	UNDETECTED	4000	UNDETECTED
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank
Sample Code	CW 112	CW 112 DUP.	CW 213FBA	CW 213FBB	CW 214TB
Inorganic Sample #	MB 0013	MB 0071	MBA 218	MBA 224	MBA 217
Organic Sample #	B 3202	B 2251	BA 250	BA 256	BA 249
Date Sampled	08/27/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	08/28/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	09/05/84	09/05/84			
North Grid					
East Grid					
FIELD PARAMETERS					
Flow (gpm)	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
Temp. (Celsius)	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
pH	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
Specific Conductivity (umho/cm)	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED	NOT MEASURED
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Barium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED
Chromium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cobalt	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Copper	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Iron	UNDETECTED	197	[80]	UNDETECTED	[80]
Lead	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyanide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED
Manganese	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Potassium	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	R 210
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Zinc	19	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-12	C-12	Field Blank	Field Blank	Trip Blank
Sample Code	CW 112	CW 112 DUP.	CW 213FBA	CW 213FBB	CW 214TB
Inorganic Sample #	MD 0013	MD 0071	MBA 218	MBA 224	MBA 217
Organic Sample #	B 3202	B 2251	BA 250	BA 256	BA 249
Date Sampled	08/27/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	08/28/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	09/05/84	09/05/84			
North Grid					
East Grid					

ORGANICS

Volatile	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
methylene chloride	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED
acetone	UNDETECTED	UNDETECTED	177	NOT REPORTED	155
trans-1,2-dichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-dichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-dichloropropane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,2,2-tetachloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
chloroethane	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
trichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
vinyl chloride	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
benzene	REJECTED	UNDETECTED	J,B 3	NOT REPORTED	J,B 2
4-methyl-2-pentanone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
tetrachloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
toluene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
2-butanone	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
ethylbenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Total Xylenes	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED

Semivolatile	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Phenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
bis(2-chloroethyl)ether	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
4-Methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Benzoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	K 10	UNDETECTED	NOT REPORTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	C-12	C-12	Field Blank	Field Blank	Trip Blank
Sample Code	CW 112	CW 112 DUP.	CW 213FBA	CW 213FBB	CW 214TB
Inorganic Sample #	MB 0013	MB 0071	MBA 218	MBA 224	MBA 217
Organic Sample #	B 3282	B 2251	BA 250	BA 256	BA 249
Date Sampled	08/27/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	08/28/84	08/31/84	12/12/84	12/13/84	12/12/84
Date Shipped	09/05/84	09/05/84			
North Grid					
East Grid					
Pesticide	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan 1	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan II	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Alpha Endosulfan	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l
Unknown	41	J 29	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	J 5	UNDETECTED	NOT REPORTED	UNDETECTED
hexamethyl-cxclotrisiloxane	UNDETECTED	UNDETECTED	200	NOT REPORTED	200
9-Octadeconamide	41	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
unknown Alkyl Benzene	27	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
unknown Alkene Bezene	12	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
hexamethylcyclotrisiloxone	UNDETECTED	UNDETECTED	200	NOT REPORTED	200

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-1	L-1	L-2	L-2	L-3	L-3
Sample Code	LW 101	LW 201	LW 102	LW 202	LW 103	LW 203
Inorganic Sample #	MD 0026	MBA 227	MD 0027	MD 216	MD 0019	MBA 214
Organic Sample #	B 2256	BA 259	B 2255	BA 240	B 3270	BA 247
Date Sampled	08/30/84	12/12/84	08/30/84	12/12/84	08/29/84	12/11/84
Date Shipped	03/30/84	12/13/84	08/30/84	12/13/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84	
North Grid	346100.040539	346100.040539	345993.401128	345993.401128	345302.162750	345302.162750
East Grid	1850530.490033	1850530.490033	1850715.641029	1850715.641029	1850630.560405	1850630.560405
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	1599000	REJECTED	955000	603000	943000	938000
Sulfate	170000	260000	56000	37000	16600	16000
Nitrate	6600	R 6500	UNDETECTED	R 200	4200	UNDETECTED
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	2800000	NOT REPORTED	1754000	NOT REPORTED	2312000	NOT REPORTED
TOC	44500	173000	16500	199000	825000	390000
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	769000	713000	495000	1779000	1057000	1700000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Ammonia	2100	R 7500	840	7000	1740	34200
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	1500	UNDETECTED	UNDETECTED	2000	7400	4000
TSS	2652000	NOT REPORTED	294000	NOT REPORTED	224000	NOT REPORTED
Total P	130	NOT REPORTED	40	NOT REPORTED	100	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	2000000	NOT REPORTED	1250000	NOT REPORTED	2160000
Solids, Suspended	NOT REPORTED	114000	NOT REPORTED	2700000	NOT REPORTED	196000
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-1	L-1	L-2	L-2	L-3	L-3
Sample Code	LW 101	LW 201	LW 102	LW 202	LW 103	LW 203
Inorganic Sample #	MD 0026	MBA 227	MD 0027	MB 216	MD 0019	MBA 214
Organic Sample #	B 2256	BA 259	B 2255	BA 248	B 3270	BA 247
Date Sampled	08/30/84	12/12/84	08/30/84	12/12/84	08/29/84	12/11/84
Date Shipped	03/30/84	12/13/84	08/30/84	12/13/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84	
North Grid	346180.040539	346180.040539	345993.401120	345993.401120	345302.162750	345302.162750
East Grid	1850530.498033	1850530.498033	1850715.641829	1850715.641829	1850630.560405	1850630.560405
FIELD PARAMETERS						
Flow (gpm)	0	0	0	0	20	30-50
Temp. (Celsius)	20	3	22.25	1	22	10
pH	4.62	4.62	5.86	6.30	6.30	6.30
Specific Conductivity (umho/cm)	402	460	1750	109	3000	1400
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	179300	95700	56.15	205000	490	UNDETECTED
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	97	120	31	S 160	50	R 50
Barium	493	UNDETECTED	277	UNDETECTED	244	UNDETECTED
Beryllium	REJECTED	16	UNDETECTED	27	REJECTED	UNDETECTED
Cadmium	15.4	8	7.3	16	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	61000	NOT REPORTED	113000	NOT REPORTED	78000
Chromium	3042	1520	600	1300	24	UNDETECTED
Cobalt	722	550	287	190	UNDETECTED	UNDETECTED
Copper	110	40	62	250	UNDETECTED	UNDETECTED
Iron	466600	315000	188200	447000	181200	195000
Lead	230	S 45	83	S 282	30	UNDETECTED
Cyanide	UNDETECTED	20	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	29000	NOT REPORTED	45000	NOT REPORTED	60000
Manganese	3500	2070	2680	3520	3105	3560
Mercury	0.2	UNDETECTED	UNDETECTED	400	UNDETECTED	UNDETECTED
Nickel	9435	7300	3875	3000	UNDETECTED	UNDETECTED
Potassium	NOT REPORTED	10000	NOT REPORTED	9000	NOT REPORTED	20000
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	311000	NOT REPORTED	199000	NOT REPORTED	424000
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Vanadium	470	170	UNDETECTED	250	UNDETECTED	UNDETECTED
Zinc	2140	1200	1400	1380	REJECTED	30
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-1	L-1	L-2	L-2	L-3	L-3
Sample Code	LW 101	LW 201	LW 102	LW 202	LW 103	LW 203
Inorganic Sample #	MB 0026	MBA 227	MB 0027	MB 216	MB 0019	MBA 214
Organic Sample #	B 2256	BA 259	B 2255	BA 248	B 3278	BA 247
Date Sampled	08/30/84	12/12/84	08/30/84	12/12/84	08/29/84	12/11/84
Date Shipped	03/30/84	12/13/84	08/30/84	12/13/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84	
North Grid	346100.040539	346100.040539	345993.401120	345993.401120	345302.162750	345302.162750
East Grid	1850530.490033	1850530.490033	1850715.641829	1850715.641829	1850638.560405	1850638.560405

ORGANICS

Volatile --------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	120	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	14	UNDETECTED	100	UNDETECTED
1,1-dichloroethane	970	UNDETECTED	160	UNDETECTED	190	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	100	UNDETECTED	230	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	40	UNDETECTED	UNDETECTED	UNDETECTED
methylene chloride	REJECTED	UNDETECTED	REJECTED	UNDETECTED	7700	2894
acetone	74000	UNDETECTED	420	UNDETECTED	8600	11521
trans-1,2-dichloroethene	66	10746	UNDETECTED	10746	1600	4577
1,2-dichloroethane	UNDETECTED	6700	3400	6700	2400	UNDETECTED
1,2-dichloropropane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	170	UNDETECTED
1,1,2,2-tetachloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	390	UNDETECTED
chloroethane	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	160	UNDETECTED
trichloroethene	160	7294	230	7294	160	UNDETECTED
vinyl chloride	UNDETECTED	UNDETECTED	810	UNDETECTED	REJECTED	UNDETECTED
benzene	65	B 1363	64	B 1363	440	15590
4-methyl-2-pentanone	700	3077	70	3077	35000	UNDETECTED
fluorotrichloromethane	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	110	UNDETECTED	UNDETECTED	UNDETECTED	73	UNDETECTED
toluene	670	15076	700	15076	7000	17464
2-butanone	820	UNDETECTED	64	UNDETECTED	5900	UNDETECTED
2-hexanone	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
ethylbenzene	55	UNDETECTED	10	UNDETECTED	400	UNDETECTED
Total Xylenes	120	605	170	605	830	3000

Semivolatile ------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Phenol	REJECTED	UNDETECTED	REJECTED	UNDETECTED	10000	UNDETECTED
bis(2-chloroethyl)ether	UNDETECTED	690	REJECTED	690	1900	1185
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	81	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
4-Methylphenol	REJECTED	UNDETECTED	REJECTED	UNDETECTED	2000	240
isophorone	2300	1038	REJECTED	1038	470	690
2-methylphenol	REJECTED	UNDETECTED	REJECTED	UNDETECTED	240	UNDETECTED
Benzoic Acid	REJECTED	351	REJECTED	351	REJECTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	43	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
diethyl phthalate	4	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-1	L-1	L-2	L-2	L-3	L-3
Sample Code	LW 101	LW 201	LW 102	LW 202	LW 103	LW 203
Inorganic Sample #	MB 0026	MBA 227	MB 0027	MB 216	MB 0019	MBA 214
Organic Sample #	B 2256	BA 259	B 2255	BA 248	B 3278	BA 247
Date Sampled	08/30/84	12/12/84	08/30/84	12/12/84	08/29/84	12/11/84
Date Shipped	03/30/84	12/13/84	08/30/84	12/13/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84	
North Grid	346100.040539	346100.040539	345993.401128	345993.401128	345302.162750	345302.162750
East Grid	1850530.490033	1850530.490033	1850715.641029	1850715.641029	1850638.560405	1850638.560405
Pesticide --------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan I	UNDETECTED	0.700	UNDETECTED	UNDETECTED	REJECTED	1.700
Endosulfan Sulfate	0.860	UNDETECTED	0.460	0.100	REJECTED	UNDETECTED
heptachlor	0.630	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	0.700
Alpha-BHC	0.760	UNDETECTED	UNDETECTED	1.600	REJECTED	UNDETECTED
Gamma-BHC(Lindane)	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	0.800
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	2.500	REJECTED	19.000
Aldrin	UNDETECTED	3.000	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDE	UNDETECTED	0.700	UNDETECTED	UNDETECTED	REJECTED	2.200
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan II	UNDETECTED	0.700	UNDETECTED	UNDETECTED	REJECTED	3.000
4,4'-DDD	UNDETECTED	0.600	UNDETECTED	UNDETECTED	REJECTED	2.900
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Alpha Endosulfan	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS --------------------------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
Benzene,Methyl-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	5440	UNDETECTED
Benzeneaceticacid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	800	UNDETECTED
Ethane,1,2-Bis(2-Chloroethoxy)-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	2600	UNDETECTED
benzene,ethyl-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	700
Unknown	J 33	NOT REPORTED	UNDETECTED	UNDETECTED	420	UNDETECTED
Unknown	J 520	NOT REPORTED	UNDETECTED	UNDETECTED	420	UNDETECTED
Unknown	J 140	NOT REPORTED	UNDETECTED	UNDETECTED	150	UNDETECTED
Unknown	J 91	NOT REPORTED	UNDETECTED	UNDETECTED	1360	UNDETECTED
Unknown	J 60	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 700	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 20	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Methane Dimethoxy	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1100	UNDETECTED
C6 H14 O Isomer	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1500	UNDETECTED
Ethane, 1,1-oxybis(2-chloro)	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	290	UNDETECTED
Non-ortho xylene	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	800	UNDETECTED
C10 H26 Isomer	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	150	UNDETECTED
Oxisane,2,3-Diethyl-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	12240	UNDETECTED
2-Hexanol	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	4000	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-1	L-1	L-2	L-2	L-3	L-3
Sample Code	LW 101	LW 201	LW 102	LW 202	LW 103	LW 203
Inorganic Sample #	MD 0026	MBA 227	MD 0027	MB 216	MD 0019	MBA 214
Organic Sample #	B 2256	BA 259	B 2255	BA 248	B 3278	BA 247
Date Sampled	08/30/84	12/12/84	08/30/84	12/12/84	08/29/84	12/11/84
Date Shipped	03/30/84	12/13/84	08/30/84	12/13/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84	
North Grid	346100.040539	346100.040539	345993.401128	345993.401128	345302.162750	345302.162750
East Grid	1050530.498833	1050530.498833	1050715.641029	1050715.641029	1050638.560405	1050638.560405
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	PRELIMINARY ug/l	FINAL ug/l
2,2'-BI-1,3-Dioxolane	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1200	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	2000	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1840	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	800	UNDETECTED
Acetamine,N,N-Dimethyl	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1360	UNDETECTED
Cyclopentanol,2-Methyl-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1280	UNDETECTED
Butane,2 Methoxy-2,3,3-Trimethyl	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1440	UNDETECTED
4-Nonene,2-Methyl	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	1600	UNDETECTED
Unknown chlorinated organic	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	3950	UNDETECTED
Phenol,4,4'-Methylenebis-	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	311	UNDETECTED
3,3,5-Trimenthyl Cyclohexol	UNDETECTED	NOT REPORTED	UNDETECTED	366	UNDETECTED	UNDETECTED
Benzeneproranoic Acid	J 60	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
hexamethyl-cxclotrisiloxane	UNDETECTED	NOT REPORTED	UNDETECTED	200	UNDETECTED	200
C6 H1202-4-hydroxy-4-methyl-2-	UNDETECTED	NOT REPORTED	UNDETECTED	593	UNDETECTED	UNDETECTED
xylene	UNDETECTED	NOT REPORTED	UNDETECTED	961	UNDETECTED	1136
xylene	UNDETECTED	NOT REPORTED	UNDETECTED	420	UNDETECTED	UNDETECTED
C7 H5N-Bentonitrile	UNDETECTED	NOT REPORTED	UNDETECTED	63	UNDETECTED	UNDETECTED
C9 H180-3,3,5-trimethylcyclehexanol	UNDETECTED	NOT REPORTED	UNDETECTED	366	UNDETECTED	1334
C4 H802S-tetrahydrothiophene-1,1-dioxide	UNDETECTED	NOT REPORTED	UNDETECTED	52	UNDETECTED	UNDETECTED
N,N-dimethylacetamide	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	802
1-methylethylbenzene	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	410
2-octanone	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	840
3-methylphenol	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	1105
Benzoic acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	571
Benzine acetic acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	1051
Benzene proprionic acid	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	224
4,4'-methylene bis phenol	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	275
2-Propanol	J 140	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,3-dimethylbenzene	J 20	NOT REPORTED	J 20	UNDETECTED	UNDETECTED	UNDETECTED
1,1'-Oxybisethane	J 50	NOT REPORTED	J 190	UNDETECTED	UNDETECTED	UNDETECTED
Dimethylbenzene Isomer	J 240	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dimethylbenzene Isomer	J 94	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyclohexanol	J 36	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Butoxyethanol	J 87	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Octanone	J 110	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Hexanonicacid	J 72	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Ethylhexanoic Acid	J 89	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyclohexanecarboxylicacid	J 140	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Octanoicacid	J 160	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1-(2-Butoxyethoxy)-Ethanol	J 71	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Acetonitrile	UNDETECTED	NOT REPORTED	J 10	UNDETECTED	UNDETECTED	UNDETECTED
1,1'-Oxybis(2-chloroethane)	UNDETECTED	NOT REPORTED	J 6	UNDETECTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-4	L-4	L-5	L-5
Sample Code	LW 104	LW 204	LW 105	LW 205
Inorganic Sample #	MD 0022	MBA 403	MB 0024	MBA 402
Organic Sample #	B 2260	BA 236	B 2258	BA 238
Date Sampled	08/29/84	12/10/84	08/29/84	12/10/84
Date Shipped	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	09/05/84		09/05/84	
North Grid	344818.003550	344818.003550	344577.141294	344577.141294
East Grid	1850485.687858	1850485.687858	1850783.776625	1850783.776625
FIELD PARAMETERS				
Flow (gpm)	1	2	0	0
Temp. (Celsies)	25.8	14.6	27	14.5
pH	6.55	6.74	6.3	6.46
Specific Conductivity (umho/cm)	3200	1025	3100	178
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	2020	1200	37005	112000
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	244	R 540	133	R 1060
Barium	406	UNDETECTED	6005	3200
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	3.2	UNDETECTED
Calcium	NOT REPORTED	10000	NOT REPORTED	35000
Chromium	52	30	1025	3700
Cobalt	UNDETECTED	UNDETECTED	UNDETECTED	[40]
Copper	UNDETECTED	UNDETECTED	185	250
Iron	139400	174000	1905000	1660000
Lead	29	UNDETECTED	250	S 500
Cyanide	UNDETECTED	R 20	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	17000	NOT REPORTED	40000
Manganese	1200	1010	11000	1100
Mercury	UNDETECTED	UNDETECTED	0.66	1.6
Nickel	UNDETECTED	UNDETECTED	140	UNDETECTED
Potassium	NOT REPORTED	42000	NOT REPORTED	66000
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	464000	NOT REPORTED	466000
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	960
Zinc	REJECTED	30	306	560
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-4	L-4	L-5	L-5
Sample Code	LW 104	LW 204	LW 105	LW 205
Inorganic Sample #	MB 0022	MBA 403	MB 0024	MBA 402
Organic Sample #	B 2260	BA 236	B 2258	BA 238
Date Sampled	08/29/84	12/10/84	08/29/84	12/10/84
Date Shipped	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	09/05/84		09/05/84	
North Grid	344818.803550	344818.803550	344577.141294	344577.141294
East Grid	1850485.687858	1850485.687858	1850783.776625	1850783.776625
SAS PARAMETER ------------	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	748000	691000	552000	668000
Sulfate	17600	23000	83200	48000
Nitrate	4100	UNDETECTED	400	R 200
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	1510000	NOT REPORTED	1656000	NOT REPORTED
TOC	34000	140000	40000	180000
BOD	REJECTED	REJECTED	REJECTED	REJECTED
COD	192000	334000	1154000	705000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Ammonia	7060	40000	910	58300
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	UNDETECTED	UNDETECTED	25000	3000
TSS	123000	NOT REPORTED	1612000	NOT REPORTED
Total P	UNDETECTED	NOT REPORTED	870	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	1590000	NOT REPORTED	1470000
Solids, Suspended	NOT REPORTED	270000	NOT REPORTED	4610000
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-4	L-4	L-5	L-5
Sample Code	LW 104	LW 204	LW 105	LW 205
Inorganic Sample #	MB 0022	MBA 483	MB 0024	MBA 482
Organic Sample #	B 2260	BA 236	B 2258	BA 238
Date Sampled	08/29/84	12/10/84	08/29/84	12/10/84
Date Shipped	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	09/05/84		09/05/84	
North Grid	344810.003550	344810.003550	344577.141294	344577.141294
East Grid	1850485.687858	1850485.687858	1850783.776625	1850783.776625

ORGANICS

Volatile --------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	11	NOT REPORTED	104	NOT REPORTED
chloroform	UNDETECTED	NOT REPORTED	16	NOT REPORTED
1,1-dichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,2-trichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1-dichloroethene	UNDETECTED	NOT REPORTED	5	NOT REPORTED
methylene chloride	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
acetone	REJECTED	NOT REPORTED	232	NOT REPORTED
trans-1,2-dichloroethene	UNDETECTED	NOT REPORTED	5	NOT REPORTED
1,2-dichloroethane	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
1,2-dichloropropane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,1-trichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
1,1,2,2-tetachloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
chloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
trichloroethene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
vinyl chloride	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
benzene	UNDETECTED	NOT REPORTED	24	NOT REPORTED
4-methyl-2-pentanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
fluorotrichloromethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
tetrachloroethene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
toluene	9	NOT REPORTED	45	NOT REPORTED
2-butanone	74	NOT REPORTED	71	NOT REPORTED
2-hexanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED
ethylbenzene	9	NOT REPORTED	76	NOT REPORTED
Total Xylenes	UNDETECTED	NOT REPORTED	26	NOT REPORTED

Semivolatile ------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Phenol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
bis(2-chloroethyl)ether	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
1,4-dichlorobenzene	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Benzyl Alcohol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
1,2-Dichlorobenzene	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
4-Methylphenol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
isophorone	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
2-methylphenol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Benzoic Acid	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Di-n-Butylphthalate	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
bis(2-Ethylhexyl)Phthalate	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
Di-n-Octyl Phthalate	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
naphthalene	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED
diethyl phthalate	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-4	L-4	L-5	L-5
Sample Code	LW 104	LW 204	LW 105	LW 205
Inorganic Sample #	MB 0022	MBA 403	MB 0024	MBA 402
Organic Sample #	B 2260	BA 236	B 2250	BA 238
Date Sampled	08/29/84	12/10/84	08/29/84	12/10/84
Date Shipped	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	09/05/84		09/05/84	
North Grid	344818.803550	344818.803550	344577.141294	344577.141294
East Grid	1850485.687850	1850485.687850	1850783.776625	1850783.776625

Pesticide ---------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	0.013	UNDETECTED	0.013	
Endosulfan I	UNDETECTED	4.320	REJECTED	0.590
Endosulfan Sulfate	UNDETECTED	0.660	REJECTED	UNDETECTED
heptachlor	UNDETECTED	UNDETECTED	REJECTED	1.560
Alpha-BHC	UNDETECTED	0.230	0.021	0.830
Gamma-BHC(Lindene)	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
PCB-1254	0.110	UNDETECTED	1.200	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	REJECTED	6.640
Aldrin	UNDETECTED	0.250	REJECTED	1.150
Heptachlor Expoxide	UNDETECTED	0.470	REJECTED	0.090
Dieldrin	UNDETECTED	UNDETECTED	REJECTED	1.170
4,4'-DDE	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan II	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDD	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	REJECTED	0.170
Alpha Endosulfan	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED

TENTATIVELY IDENTIFIED COMPOUNDS --------------------------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Ethane,1,2-Bis(2-Chloroethoxy)-	UNDETECTED	NOT REPORTED	J 56	NOT REPORTED
Unknown	J 24	NOT REPORTED	J 37	NOT REPORTED
Unknown	J 56	NOT REPORTED	J 28	NOT REPORTED
Unknown	J 23	NOT REPORTED	J 17	NOT REPORTED
Unknown	J 57	NOT REPORTED	J 23	NOT REPORTED
Unknown	J 17	NOT REPORTED	J 31	NOT REPORTED
Unknown	J 20	NOT REPORTED	J 51	NOT REPORTED
Unknown	J 14	NOT REPORTED	J 24	NOT REPORTED
Unknown	J 7	NOT REPORTED	J 10	NOT REPORTED
Unknown	J 53	NOT REPORTED	J 10	NOT REPORTED
Unknown	J 19	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	J 6	NOT REPORTED	UNDETECTED	NOT REPORTED
Unknown	J 29	NOT REPORTED	UNDETECTED	NOT REPORTED
2(3H)-Benzothiazolone	J 29	NOT REPORTED	J 13	NOT REPORTED
Benzenemethanol,Alpha-Alpha-Dimethyl	J 22	NOT REPORTED	J 18	NOT REPORTED
Hexanoicacid,3,5,5-Trimethyl-	J 10	NOT REPORTED	UNDETECTED	NOT REPORTED
2-Propanol,1-[2-(2-Methoxy-1-Methyl ethoxy)-1-Methylethoxy]-	J 10	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzenesulfonamide,N-Butyl-	J 20	NOT REPORTED	UNDETECTED	NOT REPORTED

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HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	L-4	L-4	L-5	L-5
Sample Code	LW 104	LW 204	LW 105	LW 205
Inorganic Sample #	MB 0022	MBA 403	MB 0024	MBA 402
Organic Sample #	B 2260	BA 236	B 2250	DA 238
Date Sampled	08/29/84	12/10/84	08/29/84	12/10/84
Date Shipped	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	09/05/84		09/05/84	
North Grid	344818.003550	344818.003550	344577.141294	344577.141294
East Grid	1850485.687050	1850485.687050	1850783.776625	1850783.776625
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Phenol,4,4'(1-Methylethylidene) Bis-	J 41	NOT REPORTED	UNDETECTED	NOT REPORTED
Phenol,2-[1-(4-Hdroxyphenyl)-1-Methylethyl]-	J 143	NOT REPORTED	UNDETECTED	NOT REPORTED
Hexanedioicacid,Bis(2-Ethylhexyl)ester	J 15	NOT REPORTED	UNDETECTED	NOT REPORTED
Benzene,1,2-Dimethyl-	UNDETECTED	NOT REPORTED	J 57	NOT REPORTED
Benzene,1,2-Dimethyl-	UNDETECTED	NOT REPORTED	J 12	NOT REPORTED
Benzene,1-Ethyl-2-Methyl	UNDETECTED	NOT REPORTED	J 24	NOT REPORTED
Bicyclo[2.2.1]Heptan-2-one,1,7,7-Trimethyl-	UNDETECTED	NOT REPORTED	J 19	NOT REPORTED
Unknown Substituted Benzensulfonamite	UNDETECTED	NOT REPORTED	J 20	NOT REPORTED
Hexanedioicacid, Dioctylester	UNDETECTED	NOT REPORTED	J 7	NOT REPORTED
Dichlorofluoromethane	UNDETECTED	NOT REPORTED	6	NOT REPORTED
Tetrahydrofuran	UNDETECTED	NOT REPORTED	9	NOT REPORTED
Trimethylsilanol	UNDETECTED	NOT REPORTED	8	NOT REPORTED
1-Methylethycyclopropane	UNDETECTED	NOT REPORTED	4	NOT REPORTED
Unknown C6 alkene	UNDETECTED	NOT REPORTED	13	NOT REPORTED
Unknown C7 alkane	UNDETECTED	NOT REPORTED	3	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-1	S-1	S-2	S-2	S-3	S-3	S-4	S-4
Sample Code	SW 101	SW 201	SW 102	SW 202	SW 103	SW 203	SW 104	SW 204
Inorganic Sample #	MB 0073	MBA 220	MB 0072	MBA 221	MB 0025	MBA 213	MB 0028	MBA 212
Organic Sample #	B 2249	BA 252	B 2250	BA 253	B 2257	BA 245	B 2254	BA 244
Date Sampled	08/31/84	12/13/84	08/31/84	12/13/84	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	08/31/84	12/13/84	08/31/84	12/13/84	08/30/84	12/12/84	08/30/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	346593.252218	346593.252218	346918.822724	346918.822724	346001.817309	346001.817309	345734.143191	345734.143191
East Grid	1850390.123498	1850390.123498	1850675.128219	1850675.128219	1850581.427646	1850581.427646	1850539.277212	1850539.277212
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	380000	437000	UNDETECTED	11000	1093000	1190000	1013000	1150000
Sulfate	25500	117000	12300	27000	13200	83000	29600	25000
Nitrate	110	R 500	50	R 200	4700	R 57300	5400	N 800
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	3672000	NOT REPORTED	3174000	NOT REPORTED
TOC	225000	403000	3000	REJECTED	47500	412000	25000	212000
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	370000	1570000	23000	49000	1385000	1895000	844000	862000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Ammonia	1540	7500	UNDETECTED	100	220	29300	1440	250000
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	1400	9000	1600	UNDETECTED
TSS	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	1632000	NOT REPORTED	848000	NOT REPORTED
Total P	UNDETECTED	NOT REPORTED	70	NOT REPORTED	50	NOT REPORTED	60	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	1520000	NOT REPORTED	145000	NOT REPORTED	2850000	NOT REPORTED	3270000
Solids, Suspended	NOT REPORTED	54000	NOT REPORTED	UNDETECTED	NOT REPORTED	452000	NOT REPORTED	556000
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-1	S-1	S-2	S-2	S-3	S-3	S-4	S-4
Sample Code	SW 101	SW 201	SW 102	SW 202	SW 103	SW 203	SW 104	SW 204
Inorganic Sample #	MB 0073	MBA 220	MB 0072	MBA 221	MB 0025	MBA 213	MB 0028	MBA 212
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FIELD PARAMETERS								
Flow (gpm)	0	10-15	5	10	10-20	NOT MEASURED	1-2	NOT MEASURED
Temp. (Celsius)	22	14	18.5	14.5	22.50	7.5	25	10
pH	5.96	5.17	6.4	7.8	6.30	5.92	7.24	7.09
Specific Conductivity (umho/cm)	1590	1300	128	100	3620	1376	7200	1620
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	312	11500	1085	UNDETECTED	973500	220000	34820	12100
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	41	UNDETECTED	UNDETECTED	UNDETECTED
Arsenic	10	UNDETECTED	17	UNDETECTED	115	R 236	148	R 200
Barium	200	UNDETECTED	UNDETECTED	UNDETECTED	2785	UNDETECTED	650	UNDETECTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	65	21	REJECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	142	8	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	70000	NOT REPORTED	20000	NOT REPORTED	95000	NOT REPORTED	40000
Chromium	23	UNDETECTED	UNDETECTED	UNDETECTED	35740	220	260	100
Cobalt	UNDETECTED	90	UNDETECTED	UNDETECTED	1950	830	UNDETECTED	UNDETECTED
Copper	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	2000	410	UNDETECTED	UNDETECTED
Iron	97850	122000	12750	4250	1143000	226000	167000	126000
Lead	9	UNDETECTED	8	UNDETECTED	1000	S 38	73	S 18
Cyanide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	220	22	10
Magnesium	NOT REPORTED	50000	NOT REPORTED	UNDETECTED	NOT REPORTED	56000	NOT REPORTED	73000
Manganese	1390	3400	104	60	1960	2190	350	330
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	UNDETECTED	1070	UNDETECTED	UNDETECTED	35760	17000	83	60
Potassium	NOT REPORTED	9000	NOT REPORTED	UNDETECTED	NOT REPORTED	120000	NOT REPORTED	230000
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	5	UNDETECTED	3	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	202000	NOT REPORTED	UNDETECTED	NOT REPORTED	652000	NOT REPORTED	861000
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	R 170	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	387	UNDETECTED	287	110
Zinc	REJECTED	350	REJECTED	UNDETECTED	12705	1680	220	90
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

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SURFACE WATER QUALITY ANALYTICAL RESULTS

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ORGANICS

Volatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	K 5	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	21	56
chloroform	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethane	5	NOT REPORTED	UNDETECTED	NOT REPORTED	32	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1-dichloroethene	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	K 5	UNDETECTED	UNDETECTED	UNDETECTED
methylene chloride	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	7400	REJECTED	12
acetone	530	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	6600	151	UNDETECTED
trans-1,2-dichloroethene	K 5	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-dichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	5	UNDETECTED
1,2-dichloropropane	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	18	UNDETECTED	UNDETECTED	UNDETECTED
1,1,2,2-tetachloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
chloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	K 10	UNDETECTED
trichloroethene	UNDETECTED	NOT REPORTED	K 5	NOT REPORTED	UNDETECTED	4900	UNDETECTED	UNDETECTED
vinyl chloride	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
benzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	412	B,J 2160	UNDETECTED	B 325
4-methyl-2-pentanone	91	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	J 4229	30	183
fluorotrichloromethane	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
tetrachloroethene	K 5	NOT REPORTED	K 5	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
toluene	39	NOT REPORTED	UNDETECTED	NOT REPORTED	3000	B 14916	53	B 666
2-butanone	520	NOT REPORTED	REJECTED	NOT REPORTED	26	UNDETECTED	REJECTED	UNDETECTED
2-hexanone	7	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
ethylbenzene	K 5	NOT REPORTED	UNDETECTED	NOT REPORTED	120	UNDETECTED	62	120
Total Xylenes	K 5	NOT REPORTED	UNDETECTED	NOT REPORTED	310	J 2400	88	644

Semivolatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Phenol	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
bis(2-chloroethyl)ether	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	3460	540	585
1,4-dichlorobenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	13	UNDETECTED
Benzyl Alcohol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	930	UNDETECTED	UNDETECTED
4-Methylphenol	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	1260	REJECTED	UNDETECTED
isophorone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	5575	38	70
2-methylphenol	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Benzoic Acid	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	200	REJECTED	UNDETECTED
Di-n-Butylphthalate	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	31	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED
naphthalene	10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	33	30	UNDETECTED
diethyl phthalate	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED

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Inorganic Sample #	MB 0873	MBA 220	MB 0872	MBA 221	MB 0825	MBA 213	MB 0828	MBA 212
Organic Sample #	B 2249	BA 252	B 2250	BA 253	B 2257	BA 245	B 2254	BA 244
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East Grid	1850390.123490	1850390.123490	1850675.128219	1850675.128219	1850581.427646	1850581.427646	1850539.277212	1850539.277212
Pesticide	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	UNDETECTED	UNDETECTED	0.040	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Endosulfan I	UNDETECTED	7.000	UNDETECTED	UNDETECTED	REJECTED	1.900	REJECTED	UNDETECTED
Endosulfan Sulfate	UNDETECTED	3.000	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	2.100
heptachlor	0.006	2.300	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Alpha-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	5.400	REJECTED	UNDETECTED
Gamma-BHC(Lindene)	UNDETECTED	1.600	K 0.005	UNDETECTED	REJECTED	5.100	REJECTED	1.600
PCB-1254	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Delta-BHC	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	1.700
Aldrin	UNDETECTED	6.100	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
Heptachlor Expoxide	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	0.500
Dieldrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDE	UNDETECTED	5.100	K 0.025	UNDETECTED	REJECTED	2.000	REJECTED	UNDETECTED
Endrin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	1.100
Endosulfan II	UNDETECTED	15.400	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDD	UNDETECTED	14.500	K 0.010	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
4,4'-DDT	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	1.400
Alpha Endosulfan	UNDETECTED	UNDETECTED	K 0.005	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
Furan,Tetranhydro-	J 91	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 37	UNDETECTED
Benzene,Methyl-	J 220	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzeneaceticacid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 33	UNDETECTED	UNDETECTED	UNDETECTED
Ethane,1,2-Bis(2-Chloroethoxy)-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 599	UNDETECTED	J 600	UNDETECTED
benzene,ethyl-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 29	UNDETECTED	UNDETECTED	UNDETECTED
Unknown	J 14	NOT REPORTED	UNDETECTED	NOT REPORTED	J 20	UNDETECTED	J 97	UNDETECTED
Unknown	J 42	NOT REPORTED	UNDETECTED	NOT REPORTED	J 31	UNDETECTED	J 460	UNDETECTED
Unknown	J 12	NOT REPORTED	UNDETECTED	NOT REPORTED	J 6	UNDETECTED	J 200	UNDETECTED
Unknown	J 16	NOT REPORTED	UNDETECTED	NOT REPORTED	J 11	UNDETECTED	J 120	UNDETECTED
Unknown	J 13	NOT REPORTED	UNDETECTED	NOT REPORTED	J 22	UNDETECTED	J 73	UNDETECTED
Unknown	J 51	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 31	UNDETECTED
Unknown	J 39	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 26	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 82	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 25	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 25	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 18	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 52	UNDETECTED
Unknown Hydrocarbon	J 47	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
xylene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	1099	1099	UNDETECTED	135
xylene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	582	582	UNDETECTED	47
1-methylethylbenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 20	UNDETECTED
2-Propanol	J 10	NOT REPORTED	UNDETECTED	NOT REPORTED	36	UNDETECTED	UNDETECTED	UNDETECTED
dimethoxymethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 200	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-1	S-1	S-2	S-2	S-3	S-3	S-4	S-4
Sample Code	SW 101	SW 201	SW 102	SW 202	SW 103	SW 203	SW 104	SW 204
Inorganic Sample #	MB 0873	MBA 220	MB 0872	MBA 221	MB 0025	MBA 213	MB 0028	MBA 212
Organic Sample #	B 2249	BA 252	B 2250	BA 253	B 2257	BA 245	B 2254	BA 244
Date Sampled	08/31/84	12/13/84	08/31/84	12/13/84	08/30/84	12/11/84	08/30/84	12/11/84
Date Shipped	08/31/84	12/13/84	08/31/84	12/13/84	08/30/84	12/12/84	08/30/84	12/12/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84	
North Grid	346593.252218	346593.252218	346918.822724	346918.822724	346001.817309	346001.817309	345734.143191	345734.143191
East Grid	1850390.123498	1850390.123498	1850675.128219	1850675.128219	1850581.427646	1850581.427646	1850539.277212	1850539.277212
TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l
1,3-dimethylbenzene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	71	UNDETECTED	J 24	UNDETECTED
3,3,5-Trimethylcyclohexanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 419	UNDETECTED	J 19	UNDETECTED
3,3,5-Trimethylcyclohexanol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 333	UNDETECTED	UNDETECTED	148
4-methyl-2-pentanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	1077	1077	UNDETECTED	UNDETECTED
hexamethylcyclotrisiloxone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	200	200	UNDETECTED	200
1,9-nonanediol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	20
1,7,7-trimethyl-bicyclo	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	73
4-(1-methylethyl)benzoic acid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 50	32
4-(1-methylethyl)benzoic acid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	85
2-methyl hexanoic acid	J 560	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
1,1'-Oxybisethane	J 6	NOT REPORTED	UNDETECTED	NOT REPORTED	71	UNDETECTED	J 15	UNDETECTED
Dimethylbenzene Isomer	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 119	UNDETECTED	J 120	UNDETECTED
Dimethylbenzene Isomer	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 49	UNDETECTED	J 30	UNDETECTED
Hexanonicacid	J 2000	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Ethylhexanoic Acid	J 45	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cyclohexanecarboxylicacid	J 210	NOT REPORTED	UNDETECTED	NOT REPORTED	J 2	UNDETECTED	UNDETECTED	UNDETECTED
1,1'-Oxybis[2-chloroethane]	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	39	UNDETECTED	J 22	UNDETECTED
Benzenemethanol,Alpha-Alpha-Dimethyl	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 51	UNDETECTED	UNDETECTED	UNDETECTED
2-Propanol,1-[2-(2-Methoxy-1-Methyl ethoxy)-1-Methylethoxy]-	J 45	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Bicyclo[2.2.1]Heptan-2-one,1,7,7-Trimethyl-	J 250	NOT REPORTED	UNDETECTED	NOT REPORTED	J 11	UNDETECTED	J 150	UNDETECTED
Trimethylsilanol	J 2	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 7	UNDETECTED
2-Methyl-2-Propanol	J 17	NOT REPORTED	UNDETECTED	NOT REPORTED	37	UNDETECTED	J 26	UNDETECTED
Pentanoic Acid	J 1300	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Methylpentanoicacid	J 440	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Heptanoic Acid	J 430	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Benzenepropanoicacid	J 290	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
2-Methylbutanoicacid	J 73	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Acetonitrile	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	20	UNDETECTED	UNDETECTED	UNDETECTED
(methylthio)-ethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	25	UNDETECTED	UNDETECTED	UNDETECTED
3-methyl-2-butanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	22	UNDETECTED	UNDETECTED	UNDETECTED
2,3-Dimethyl-2-Hexanol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 13	UNDETECTED	UNDETECTED	UNDETECTED
Pentanoicacid,2-Methyl-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 25	UNDETECTED	UNDETECTED	UNDETECTED
Hexanoicacid,2-Ethyl-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 51	UNDETECTED	UNDETECTED	UNDETECTED
Phosphoricacid,Triethylester	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 2	UNDETECTED	UNDETECTED	UNDETECTED
Benzoicacid,4-(1-Methylethyl)-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 62	UNDETECTED	UNDETECTED	UNDETECTED
Methylpentanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 6	UNDETECTED
Benzene,(1-Methylethyl)-	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 32	UNDETECTED
Bicyclo[2.2.1]heptan-z-one,1.7.7-Trimethyl	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	J 62	UNDETECTED

HELEN KRAMER LANDFILLN
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-5	S-5	S-6	S-6	S-6	S-7	S-7
Sample Code	SW 105	SW 205	SW 106	SW 206	SW 206 DUP.	SW 107	SW 207
Inorganic Sample #	MB 0018	MBA 211	MB 0011	MBA 208		MB 0012	MBA 215
Organic Sample #	B 3277	BA 243	B 3272	BA 240		B 3273	BA 246
Date Sampled	08/29/84	12/11/84	08/28/84	12/11/84		08/28/84	12/11/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/11/84		08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84			09/05/84	
North Grid	345514.662286	345514.662286	345357.108495	345357.108495	345357.108495	345082.534185	345082.534185
East Grid	1850658.560405	1850658.560405	1850606.002497	1850606.002497	1850606.002497	1850462.514695	1850462.514695
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	1219000	1160000	980000	824000	910000	702000	624000
Sulfate	13000	23000	9000	45000	42000	119000	81000
Nitrate	2900	R 100	9800	R 1900	R 1600	10600	600
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	3776000	NOT REPORTED	1266000	NOT REPORTED	NOT REPORTED	2276000	NOT REPORTED
TOC	375000	337000	570000	872000	860000	8000	365000
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	923000	1079000	1481000	3894000	4102000	1269000	1900000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity,hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Ammonia	6100	156000	220	53600	53900	UNDETECTED	18600
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	3300	5000	19200	6000	NOT REPORTED	12000	2000
TSS	110000	NOT REPORTED	252000	NOT REPORTED	NOT REPORTED	249000	NOT REPORTED
Total P	330	NOT REPORTED	33	NOT REPORTED	NOT REPORTED	128	NOT REPORTED
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DM)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon,organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids,dissolved at 180C	NOT REPORTED	3200000	NOT REPORTED	2700000	2700000	NOT REPORTED	1840000
Solids, Suspended	NOT REPORTED	90000	NOT REPORTED	418000	422000	NOT REPORTED	244000
Specific Conductance,25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-5	S-5	S-6	S-6	S-6	S-7	S-7
Sample Code	SW 105	SW 205	SW 106	SW 206	SW 206 DUP.	SW 107	SW 207
Inorganic Sample #	MB 0018	MBA 211	MB 0011	MBA 208		MB 0012	MBA 215
Organic Sample #	B 3277	BA 243	B 3272	BA 240		B 3273	BA 246
Date Sampled	08/29/84	12/11/84	08/28/84	12/11/84	12/11/84	08/28/84	12/11/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/11/84	12/11/84	08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84			09/05/84	
North Grid	345514.662286	345514.662286	345357.108495	345357.108495	345357.108495	345082.534185	345082.534185
East Grid	1850658.560405	1850658.560405	1850606.002437	1850606.002437	1850606.002437	1850462.514695	1850462.514695

FIELD PARAMETERS

Flow (gpm)	10-15	10-15	NOT MEASURED	0.5-1	NOT MEASURED	1-2	2-3
Temp. (Celsius)	23	11.9	27	6.6	NOT MEASURED	24	11.5
pH	6.72	6.59	6.44	8.75	NOT MEASURED	6.02	6.3
Specific Conductivity (umho/cm)	6100	910	4650	1670	NOT MEASURED	3100	NOT MEASURED

INORGANICS ----------	FINAL ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL mg/l	FINAL mg/l
Aluminum	1560	1100	130	UNDETECTED	NOT REPORTED	1130	300
Antimony	22	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Arsenic	40	R 102	180	S,R 340	NOT REPORTED	125	R 122
Barium	245	UNDETECTED	316	UNDETECTED	NOT REPORTED	195	UNDETECTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	REJECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	81000	NOT REPORTED	99000	NOT REPORTED	NOT REPORTED	56000
Chromium	76	50	UNDETECTED	UNDETECTED	NOT REPORTED	15	UNDETECTED
Cobalt	UNDETECTED	UNDETECTED	UNDETECTED	(40)	NOT REPORTED	92	60
Copper	50	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Iron	102400	164000	404200	424000	NOT REPORTED	234300	187000
Lead	86	S 15	32	UNDETECTED	NOT REPORTED	37	UNDETECTED
Cyanide	10	UNDETECTED	UNDETECTED	REJECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Magnesium	NOT REPORTED	91000	NOT REPORTED	136000	NOT REPORTED	NOT REPORTED	54000
Manganese	642	750	1312	1840	NOT REPORTED	5035	4010
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	300	NOT REPORTED	UNDETECTED	UNDETECTED
Nickel	69	40	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Potassium	NOT REPORTED	150000	NOT REPORTED	44000	NOT REPORTED	NOT REPORTED	21000
Selenium	UNDETECTED	UNDETECTED	2	UNDETECTED	NOT REPORTED	20	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	753000	NOT REPORTED	453000	NOT REPORTED	NOT REPORTED	455000
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	100	UNDETECTED	100	NOT REPORTED	UNDETECTED	UNDETECTED
Zinc	REJECTED	90	REJECTED	(10)	NOT REPORTED	REJECTED	80
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-5	S-5	S-6	S-6	S-6	S-7	S-7
Sample Code	SW 105	SW 205	SW 106	SW 206	SW 206 DUP.	SW 107	SW 207
Inorganic Sample #	MB 0018	MBA 211	MB 0011	MBA 208		MB 0012	MBA 215
Organic Sample #	B 3277	BA 243	B 3272	BA 240		B 3273	BA 246
Date Sampled	08/29/84	12/11/84	08/28/84	12/11/84		08/28/84	12/11/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/11/84		08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84			09/05/84	
North Grid	345514.662286	345514.662286	345357.108495	345357.108495	345357.108495	345082.534185	345082.534185
East Grid	1850658.560405	1850658.560405	1850606.002497	1850606.002497	1850606.002497	1850462.514695	1850462.514695

ORGANICS

Volatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l
chlorobenzene	130	UNDETECTED	61	NOT REPORTED	NOT REPORTED	86	UNDETECTED
chloroform	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	2000	3243
1,1-dichloroethane	UNDETECTED	UNDETECTED	REJECTED	NOT REPORTED	NOT REPORTED	450	UNDETECTED
1,1,2-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	280	UNDETECTED
1,1-dichloroethene	UNDETECTED	UNDETECTED	REJECTED	NOT REPORTED	NOT REPORTED	86	UNDETECTED
methylene chloride	280	650	2300	NOT REPORTED	NOT REPORTED	790	8593
acetone	1400	2100	27000	NOT REPORTED	NOT REPORTED	21000	8819
trans-1,2-dichloroethene	190	UNDETECTED	180	NOT REPORTED	NOT REPORTED	4500	8221
1,2-dichloroethane	63	UNDETECTED	REJECTED	NOT REPORTED	NOT REPORTED	7300	UNDETECTED
1,2-dichloropropane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
1,1,1-trichloroethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	650	J 1938
1,1,2,2-tetachloroethane	UNDETECTED	UNDETECTED	32	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
chloroethane	REJECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	REJECTED	UNDETECTED
trichloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	4300	8846
vinyl chloride	REJECTED	UNDETECTED	REJECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
benzene	600	B 1650	710	NOT REPORTED	NOT REPORTED	1700	D 3341
4-methyl-2-pentanone	1000	UNDETECTED	27000	NOT REPORTED	NOT REPORTED	UNDETECTED	5994
fluorotrichloromethane	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	17000	UNDETECTED
tetrachloroethene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	140	UNDETECTED
toluene	3200	B 6150	34000	NOT REPORTED	NOT REPORTED	15000	D 28452
2-butanone	1200	UNDETECTED	22000	NOT REPORTED	NOT REPORTED	8400	UNDETECTED
2-hexanone		UNDETECTED	120	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
ethylbenzene	840	1500	2300	NOT REPORTED	NOT REPORTED	1600	3261
Total Xylenes	900	1750	3600	NOT REPORTED	NOT REPORTED	3500	14000

Semivolatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l
2,4-dimethylphenol	REJECTED	95	430	NOT REPORTED	NOT REPORTED	REJECTED	UNDETECTED
Phenol	UNDETECTED	625	15000	NOT REPORTED	NOT REPORTED	55000	UNDETECTED
bis(2-chloroethyl)ether	14000	UNDETECTED	14000	NOT REPORTED	NOT REPORTED	1000	UNDETECTED
1,4-dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzyl Alcohol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
1,2-Dichlorobenzene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
4-Methylphenol	UNDETECTED	UNDETECTED	2700	NOT REPORTED	NOT REPORTED	3700	455
isophorone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
2-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	REJECTED	UNDETECTED
Benzoic Acid	REJECTED	1415	NOT REPORTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Di-n-Butylphthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
bis(2-Ethylhexyl)Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Di-n-Octyl Phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
naphthalene	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
diethyl phthalate	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED

HELEN KRAMER LANDFILLM
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-5	S-5	S-6	S-6	S-6	S-7	S-7
Sample Code	SW 105	SW 205	SW 106	SW 206	SW 206 DUP.	SW 107	SW 207
Inorganic Sample #	MB 0018	MBA 211	MB 0011	MBA 200		MB 0012	MBA 215
Organic Sample #	B 3277	BA 243	B 3272	BA 240		B 3273	BA 246
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Date Shipped	08/29/84	12/12/84	08/28/84	12/11/84		08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84			09/05/84	
North Grid	345514.662286	345514.662286	345357.100495	345357.100495	345357.100495	345002.534185	345002.534185
East Grid	1850658.560405	1850658.560405	1850606.002497	1850606.002497	1850606.002497	1850462.514695	1850462.514695
Pesticide ---------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l
Beta-BHC	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Endosulfan 1	REJECTED	UNDETECTED	REJECTED	1.520	NOT REPORTED	UNDETECTED	UNDETECTED
Endosulfan Sulfate	REJECTED	0.600	REJECTED	1.400	NOT REPORTED	UNDETECTED	UNDETECTED
heptachlor	REJECTED	0.200	REJECTED	2.130	NOT REPORTED	UNDETECTED	2.500
Alpha-BHC	REJECTED	0.900	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindene)	REJECTED	1.400	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
PCB-1254	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Delta-BHC	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Aldrin	REJECTED	0.300	REJECTED	2.910	NOT REPORTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	REJECTED	0.600	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	0.970
Dieldrin	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
4,4'-DDE	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
Endrin	REJECTED	0.800	REJECTED	2.760	NOT REPORTED	UNDETECTED	0.700
Endosulfan II	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	2.500
4,4'-DDD	REJECTED	UNDETECTED	REJECTED	2.650	NOT REPORTED	UNDETECTED	UNDETECTED
4,4'-DDT	REJECTED	UNDETECTED	REJECTED	0.600	NOT REPORTED	UNDETECTED	UNDETECTED
Alpha Endosulfan	REJECTED	UNDETECTED	REJECTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED
TENTATIVELY IDENTIFIED COMPOUNDS ------------------------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l
Furan, Tetrahydro-	99	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Cyclohexane, (2-Methylpropyl)-	170	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzene, Methyl-	2560	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzeneaceticacid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	864	UNDETECTED
benzene, ethyl-	960	535	7181	NOT REPORTED	NOT REPORTED	1242	UNDETECTED
Unknown	660	UNDETECTED	2285	NOT REPORTED	NOT REPORTED	430	UNDETECTED
Unknown	2720	UNDETECTED	734	NOT REPORTED	NOT REPORTED	552	UNDETECTED
Unknown	320	UNDETECTED	3754	NOT REPORTED	NOT REPORTED	759	UNDETECTED
Unknown	309	UNDETECTED	816	NOT REPORTED	NOT REPORTED	1449	UNDETECTED
Unknown	UNDETECTED	UNDETECTED	649	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Unknown	UNDETECTED	UNDETECTED	1632	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Ethane, 1,1-oxybis(2-chloro)	470	UNDETECTED	860	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	UNDETECTED	816	NOT REPORTED	NOT REPORTED	1380	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	UNDETECTED	1091	NOT REPORTED	NOT REPORTED	1242	UNDETECTED
Unknown Carboxylic Acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	3700	UNDETECTED
Unknown chlorinated organic	15759	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Phenol, 4,4'-Methylenebis-	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	605	UNDETECTED
Silicone	240	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Silicone	1440	UNDETECTED	1142	NOT REPORTED	NOT REPORTED	483	UNDETECTED

HELEN KRAMER LANDFILLM
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-5	S-5	S-6	S-6	S-6	S-7	S-7
Sample Code	SW 105	SW 205	SW 106	SW 206	SW 206 DUP.	SW 107	SW 207
Inorganic Sample #	MB 0018	MBA 211	MB 0011	MBA 208		MB 0012	MBA 215
Organic Sample #	B 3277	BA 243	B 3272	BA 240		B 3273	BA 246
Date Sampled	08/29/84	12/11/84	08/28/84	12/11/84		08/28/84	12/11/84
Date Shipped	08/29/84	12/12/84	08/28/84	12/11/84		08/29/84	12/12/84
Date Shipped	09/05/84		09/05/84			09/05/84	
North Grid	345514.662286	345514.662286	345357.100495	345357.100495	345357.100495	345002.534185	345002.534185
East Grid	1850658.560405	1850658.560405	1850606.002497	1850606.002497	1850606.002497	1850462.514695	1850462.514695
2-Hexanone	800	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
1,4 Oxatriane	1200	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Unknown Ketone	4000	UNDETECTED	2448	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Benzoic acid,4-(1-Methyethyl)	'465	170	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Ethanol,2-[2-(2-Chloroethoxy) Ethoxy]	465	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Isopropyl Alcohol	UNDETECTED	UNDETECTED	300	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
2 Butenol,3-Methyl	UNDETECTED	UNDETECTED	460	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Butenol	UNDETECTED	UNDETECTED	3900	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Alcohol	UNDETECTED	UNDETECTED	1100	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Unknown Hydrocarbon	640	UNDETECTED	1100	NOT REPORTED	NOT REPORTED	276	UNDETECTED
Unknown Hydrocarbon	UNDETECTED	UNDETECTED	9087	NOT REPORTED	NOT REPORTED	1000	UNDETECTED
Undecanone	UNDETECTED	UNDETECTED	2000	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Methyl Benzene	UNDETECTED	UNDETECTED	12403	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
2-Methyl-Hexanoic Acid	UNDETECTED	UNDETECTED	1387	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
4-Methyl-2 Heptanone	UNDETECTED	UNDETECTED	5712	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
Unknown alcohol	UNDETECTED	UNDETECTED	1958	NOT REPORTED	NOT REPORTED	300	UNDETECTED
Unknown alcohol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	3243	UNDETECTED
Unknown alcohol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	864	UNDETECTED
3,3,5-Trimenthyl Cyclohexol	UNDETECTED	UNDETECTED	2285	NOT REPORTED	NOT REPORTED	UNDETECTED	UNDETECTED
2-Pentanol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	310	UNDETECTED
2-Pentanol,-4 Methyl	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	430	UNDETECTED
Oxirane,2,3-Diethyl	UNDETECTED	UNDETECTED	8894	NOT REPORTED	NOT REPORTED	5727	UNDETECTED
Propanoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	759	UNDETECTED
3-Buten-2-one,4-[4(Aretyloxy)-2,2,6-Trimethyl-7-Oxali cyclo[6.3.0]	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	1514	UNDETECTED
Ethanol,2-[2-Chloroethoxy) Ethoxy]	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	390	UNDETECTED
2-Imidazolidinethione	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	390	UNDETECTED
Phenol,2-[(4-Hydroxylhexyl) Methyl]	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	726	UNDETECTED
Unknown Carboxylic Acid Ester	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	10488	UNDETECTED
Benzene,1-Ethyl-3-Methyl	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	1863	UNDETECTED
Benzeneproranoic Acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	683	UNDETECTED
xylene	1500	200	4300	NOT REPORTED	NOT REPORTED	3000	1985
xylene	1920	UNDETECTED	4162	NOT REPORTED	NOT REPORTED	3864	UNDETECTED
xylene	UNDETECTED	UNDETECTED	1469	NOT REPORTED	NOT REPORTED	2070	UNDETECTED
N,N-dimethylacetamide	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	6480
4,4'-methylene bis phenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	620
hexamethylcyclotrisiloxone	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	200
3-methylphenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	4575
2-methyl hexanoic acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	1038
Benzoic acid	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	1823
2,2'-methylenebis phenol	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	NOT REPORTED	UNDETECTED	864

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-8	S-8	S-9	S-9	S-10	S-10	S-11	S-11	S-12
Sample Code	SW 108	SW 208	SW 109	SW 209	SW 110	SW 210	SW 111	SW 211	SW 112 DUP.
Inorganic Sample #	MB 0016	MB 209	MB 0068	MBA 206	MB 0070	MBA 207	MB 0020	MBA 222	MB 0023
Organic Sample #	B 3274	BA 240	B 2253	BA 237	B 2252	BA 239	B 3280	BA 254	B 2259
Date Sampled	08/28/84	12/11/84	08/30/84	12/11/84	08/30/84	12/11/84	08/29/84	12/13/84	08/29/84
Date Shipped	08/29/84	12/11/84	08/30/84	12/11/84	08/31/84	12/12/84	08/29/84	12/13/84	08/30/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84		09/05/84
North Grid	344999.980184	344999.980184	344483.976576	344483.976576	344376.100231	344376.100231	343801.001380	343801.001380	
East Grid	1850412.681064	1850412.681064	1850903.046043	1850903.046043	1850872.279332	1850872.279332	1850691.205138	1850691.205138	
SAS PARAMETER	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Chloride	1369000	910000	702000	730000	893000	940000	12000	14000	12000
Sulfate	13000	22000	21000	29000	39000	50000	UNDETECTED	UNDETECTED	UNDETECTED
Nitrate	5000	R 200	1900	R 100	4500	R 2000	UNDETECTED	R 5200	3200
Carbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Bicarbonate	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
TDS	3104000	NOT REPORTED	1494000	NOT REPORTED	NOT REPORTED	NOT REPORTED	70000	NOT REPORTED	112000
TOC	510000	200006	10000	65000	19000	253000	4000	REJECTED	4000
BOD	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	REJECTED
COD	780000	UNDETECTED	532000	369000	653000	713000	27000	144000	27000
Alkalinity, pht	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinty (CaCO3)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Alkalinity, hydroxide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Phosphorus, Total	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED
Ammonia	1050	35900	8600	14200	1200	150000	UNDETECTED	100	210
Sulfide	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Fluoride	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Petroleum Hydrocarbons	4800	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
TSS	182000	NOT REPORTED	221000	NOT REPORTED	2460000	NOT REPORTED	62000	NOT REPORTED	40000
Total P	284	NOT REPORTED	1000	NOT REPORTED	70	NOT REPORTED	10	NOT REPORTED	10
Halogen(TOX)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
pH	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Sulfate, turbidimetric	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,D (DW)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
2,4,5 TP (Silvex)	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Carbon, organic	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED
Solids, dissolved at 180C	NOT REPORTED	2180000	NOT REPORTED	1470000	NOT REPORTED	2540000	NOT REPORTED	59000	NOT REPORTED
Solids, Suspended	NOT REPORTED	210000	NOT REPORTED	370000	NOT REPORTED	114000	NOT REPORTED	742000	NOT REPORTED
Specific Conductance, 25C	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-8	S-8	S-9	S-9	S-10	S-10	S-11	S-11	S-12
Sample Code	SW 100	SW 200	SW 109	SW 209	SW 110	SW 210	SW 111	SW 211	SW 112 DUP.
Inorganic Sample #	MB 0016	MB 209	MB 0068	MBA 206	MB 0070	MBA 207	MB 0020	MBA 222	MB 0023
Organic Sample #	B 3274	BA 240	B 2253	BA 237	B 2252	BA 239	B 3200	BA 254	B 2259
Date Sampled	08/28/84	12/11/84	08/30/84	12/11/84	08/30/84	12/11/84	08/29/84	12/13/84	08/29/84
Date Shipped	08/29/84	12/11/84	08/30/84	12/11/84	08/31/84	12/12/84	08/29/84	12/13/84	08/30/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84		09/05/84
North Grid	344999.900184	344999.900184	344483.976576	344483.976576	344376.100231	344376.100231	343801.001380	343801.001380	
East Grid	1850412.681064	1850412.681064	1850903.046843	1850903.046843	1850072.279332	1850072.279332	1850691.205138	1850691.205138	
FIELD PARAMETERS									
Flow (gpm)	3-5	30-50	0	0	2-5	1	15	10-20	NOT MEASURED
Temp. (Celsius)	NOT MEASURED	13.0	28	12.0	30	14.0	17.5	10.5	NOT MEASURED
pH	NOT MEASURED	6.65	5.69	6.16	6.5	6.03	6.44	5.33	NOT MEASURED
Specific Conductivity (umho/cm)	NOT MEASURED	1620	2733	800	4350	2700	90	72	NOT MEASURED
INORGANICS	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l
Aluminum	3700	UNDETECTED	6100	2600	1730	1000	734	7500	145
Antimony	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	28
Arsenic	144	R,S 60	58	R 34	55	R 42	UNDETECTED	UNDETECTED	UNDETECTED
Barium	390	UNDETECTED	110	UNDETECTED	830	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Beryllium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Cadmium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Calcium	NOT REPORTED	52000	NOT REPORTED	11000	NOT REPORTED	32000	NOT REPORTED	7000	NOT REPORTED
Chromium	55	UNDETECTED	26	UNDETECTED	61	40	UNDETECTED	50	11
Cobalt	75	UNDETECTED	UNDETECTED	UNDETECTED	97	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Copper	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Iron	309300	REJECTED	110400	136000	147400	42600	3890	10000	REJECTED
Lead	116	UNDETECTED	47	UNDETECTED	41	S 12	6	S 50	UNDETECTED
Cyanide	UNDETECTED	UNDETECTED	UNDETECTED	R 30	UNDETECTED	R 20	UNDETECTED	40	UNDETECTED
Magnesium	NOT REPORTED	52000	NOT REPORTED	16000	NOT REPORTED	750000	NOT REPORTED	UNDETECTED	NOT REPORTED
Manganese	4890	REJECTED	3182	3550	4935	2310	58	80	45
Mercury	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Nickel	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	(30)	UNDETECTED	UNDETECTED	UNDETECTED
Potassium	NOT REPORTED	22000	NOT 'REPORTED	5000	NOT REPORTED	300000	NOT REPORTED	(4000)	NOT REPORTED
Selenium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Silver	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Sodium	NOT REPORTED	486000	NOT REPORTED	470000	NOT REPORTED	730000	NOT REPORTED	UNDETECTED	NOT REPORTED
Thallium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Tin	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Vanadium	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Zinc	17400	250	REJECTED	230	REJECTED	40	REJECTED	120	REJECTED
Percent Solids	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED	NOT REPORTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-8	S-8	S-9	S-9	S-10	S-10	S-11	S-11	S-12
Sample Code	SW 108	SW 208	SW 109	SW 209	SW 110	SW 210	SW 111	SW 211	SW 112 DUP.
Inorganic Sample #	MB 0016	MB 209	MB 0068	MBA 206	MB 0070	MBA 207	MB 0020	MBA 222	MB 0023
Organic Sample #	B 3274	BA 240	B 2253	BA 237	B 2252	BA 239	B 3280	BA 254	B 2259
Date Sampled	08/28/84	12/11/84	08/30/84	12/11/84	08/30/84	12/11/84	08/29/84	12/13/84	08/29/84
Date Shipped	08/29/84	12/11/84	08/30/84	12/11/84	08/31/84	12/12/84	08/29/84	12/13/84	08/30/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84		09/05/84
North Grid	344999.908184	344999.908184	344483.976576	344483.976576	344376.100231	344376.100231	343801.001380	343801.001380	
East Grid	1850412.681064	1850412.681064	1850983.046843	1850983.046843	1850872.279332	1850872.279332	1850691.205138	1850691.205138	
ORGANICS									
Volatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
chlorobenzene	360	NOT REPORTED	27	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
chloroform	46	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1-dichloroethane	400	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,2-trichloroethane	720	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1-dichloroethene	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
methylene chloride	410	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
acetone	6300	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
trans-1,2-dichloroethene	1100	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-dichloroethane	360	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-dichloropropane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,1-trichloroethane	330	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,1,2,2-tetachloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
chloroethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED
trichloroethene	140	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
vinyl chloride	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED
benzene	530	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED
4-methyl-2-pentanone	36000	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
fluorotrichloromethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
tetrachloroethene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
toluene	10000	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
2-butanone	3200	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
2-hexanone	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
ethylbenzene	570	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Total Xylenes	950	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Semivolatile	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	FINAL ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
2,4-dimethylphenol	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Phenol	13000	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
bis(2-chloroethyl)ether	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
1,4-dichlorobenzene	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
Benzyl Alcohol	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
1,2-Dichlorobenzene	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
4-Methylphenol	2000	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
isophorone	300	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
2-methylphenol	260	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
Benzoic Acid	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Di-n-Butylphthalate	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
bis(2-Ethylhexyl)Phthalate	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	K 10	NOT REPORTED	REJECTED	NOT REPORTED	REJECTED
Di-n-Octyl Phthalate	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
naphthalene	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	K 10	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED
diethyl phthalate	UNDETECTED	NOT REPORTED	REJECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	REJECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-8	S-8	S-9	S-9	S-10	S-10	S-11	S-11	S-12
Sample Code	SW 100	SW 200	SW 109	SW 209	SW 110	SW 210	SW 111	SW 211	SW 112 DUP.
Inorganic Sample #	MB 0016	MB 209	MB 0068	MBA 206	MB 0070	MBA 207	MB 0020	MBA 222	MB 0023
Organic Sample #	B 3274	DA 240	B 2253	BA 237	B 2252	BA 239	B 3200	BA 254	B 2259
Date Sampled	08/28/84	12/11/84	08/30/84	12/11/84	08/30/84	12/11/84	08/29/84	12/13/84	08/29/84
Date Shipped	08/29/84	12/11/84	08/30/84	12/11/84	08/31/84	12/12/84	08/29/84	12/13/84	08/30/84
Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84		09/05/84
North Grid	344999.908184	344999.908184	344483.976576	344483.976576	344376.100231	344376.100231	343801.001380	343801.001380	
East Grid	1850412.681064	1850412.681064	1850903.046843	1850903.046843	1850872.279332	1850872.279332	1850691.205138	1850691.205138	

Pesticide	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
Beta-BHC	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	2.490	UNDETECTED	UNDETECTED	0.007
Endosulfan 1	REJECTED	UNDETECTED	REJECTED	2.200	REJECTED	0.950	UNDETECTED	UNDETECTED	REJECTED
Endosulfan Sulfate	REJECTED	5.170	REJECTED	0.430	REJECTED	0.630	UNDETECTED	UNDETECTED	UNDETECTED
heptachlor	REJECTED	1.240	REJECTED	0.740	REJECTED	0.064	UNDETECTED	UNDETECTED	UNDETECTED
Alpha-BHC	REJECTED	0.660	REJECTED	UNDETECTED	REJECTED	0.970	UNDETECTED	UNDETECTED	UNDETECTED
Gamma-BHC(Lindene)	REJECTED	0.560	REJECTED	UNDETECTED	REJECTED	0.650	UNDETECTED	UNDETECTED	UNDETECTED
PCB-1254	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Delta-BHC	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	2.470	UNDETECTED	UNDETECTED	UNDETECTED
Aldrin	REJECTED	0.710	REJECTED	0.640	REJECTED	0.910	UNDETECTED	UNDETECTED	UNDETECTED
Heptachlor Expoxide	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Dieldrin	REJECTED	UNDETECTED	REJECTED	1.310	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDE	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endrin	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
Endosulfan II	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDD	REJECTED	1.110	REJECTED	2.470	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED
4,4'-DDT	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	0.220	UNDETECTED	UNDETECTED	UNDETECTED
Alpha Endosulfan	REJECTED	UNDETECTED	REJECTED	UNDETECTED	REJECTED	UNDETECTED	UNDETECTED	UNDETECTED	UNDETECTED

TENTATIVELY IDENTIFIED COMPOUNDS	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
Hexanoicacid,2-Methyl-	1032	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Benzeneaceticacid	1047	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Chlorobenzene	2193	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	330	NOT REPORTED	J 13	NOT REPORTED	J 36	J 36	35	NOT REPORTED	J 16
Unknown	516	NOT REPORTED	J 18	NOT REPORTED	J 8	J 8	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	903	NOT REPORTED	J 24	NOT REPORTED	J 41	J 41	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	1540	NOT REPORTED	J 12	NOT REPORTED	J 21	J 21	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	903	NOT REPORTED	J 19	NOT REPORTED	J 42	J 42	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	2193	NOT REPORTED	J 30	NOT REPORTED	J 35	J 35	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	583	NOT REPORTED	J 11	NOT REPORTED	J 23	J 23	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	333	NOT REPORTED	J 12	NOT REPORTED	J 26	J 26	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	J 10	NOT REPORTED	J 56	J 7	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	J 8	NOT REPORTED	J 19	J 56	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 7	J 19	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 93	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 58	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
2-Hexanol	8643	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	UNDETECTED	UNDETECTED	NOT REPORTED	UNDETECTED
Acetamine,N,N-Dimethyl	6192	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown Ketone	19737	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown Hydrocarbon	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	27	NOT REPORTED	UNDETECTED
Methyl Benzene	5160	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Propanoic Arid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Oxirane,2,3-Diethyl	950	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED

HELEN KRAMER LANDFILL
SURFACE WATER QUALITY ANALYTICAL RESULTS

Sample Location	S-8	S-8	S-9	S-9	S-10	S-10	S-11	S-11	S-12
Sample Code	SW 108	SW 208	SW 109	SW 209	SW 110	SW 210	SW 111	SW 211	SW 112 DUP.
Inorganic Sample #	MB 0016	MB 209	MB 0868	MBA 206	MB 0070	MBA 207	MB 0020	MBA 222	MB 0023
Organic Sample #	B 3274	BA 240	B 2253	BA 237	B 2252	BA 239	B 3280	BA 254	B 2259
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Date Shipped	09/05/84		09/05/84		09/05/84		09/05/84		09/05/84
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TENTATIVELY IDENTIFIED COMPOUNDS --------------------------------	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l	PRELIMINARY ug/l	FINAL ug/l
2-Butanol,3-Methyl	250	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
Unknown Alkene	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	43	NOT REPORTED	UNDETECTED
Hexanedioic Acid Diodylestr	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	12	NOT REPORTED	UNDETECTED
xylene	100	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
xylene	2064	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
xylene	2064	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,2-Bis(2-Chloroethoxy)Ethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 84	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
dimethoxymethane	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 5	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
N-Butylbenzene sulfonamide	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 39	J 39	UNDETECTED	NOT REPORTED	UNDETECTED
unknown C6 Alkene	UNDETECTED	NOT REPORTED	J 18	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
4(1,1-Dimethylethyl)Benzoic Acid	UNDETECTED	NOT REPORTED	J 17	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
.Alpha.,.Alpha.-Dimethylbenzene Methanol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 22	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
1,7,7,-Trimethylbicyclo[2.2.1] hepten-2-one	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 15	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
4-Propoxyphenol	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 6	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
3,5,5-Trimethylhexanoic acid	UNDETECTED	NOT REPORTED	J 13	NOT REPORTED	J 34	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED
2(3H)-Benzothiazolone	UNDETECTED	NOT REPORTED	J 17	NOT REPORTED	J 36	J 36	UNDETECTED	NOT REPORTED	UNDETECTED
4-(1,1-Dimethylethyl)benzoicacid	UNDETECTED	NOT REPORTED	UNDETECTED	NOT REPORTED	J 34	NOT REPORTED	UNDETECTED	NOT REPORTED	UNDETECTED

REMEDIAL INVESTIGATION/FEASIBILITY STUDY RESPONSIVENESS SUMMARY FOR THE HELEN KRAMER LANDFILL SITE

MANTUA TOWNSHIP, NEW JERSEY

BASED ON COMMENTS FROM
PUBLIC MEETING OF
AUGUST 1, 1985

Topic: **Health Concerns**

Issue: Are any wells in the landfill area used for the irrigation of crops?

Response: A farmer living west of the landfill had a fire well that was installed to provide water to extinguish previous fires. He then turned this well into an irrigation well. We tested that well very early on and it is clean. It is a deep well.

Issue: Are you going to be testing our wells?

Response: No, there will be testing of EPA monitoring wells as part of the design and monitoring program that we will be developing. We do not like to use residential wells as monitoring wells. Our wells will detect any contamination before it reaches any private wells.

Issue: You took these air samples in April or May when the wind was blowing at least 30 miles per hour. I saw you people doing this. And when you took your air samples, you shouldn't have even been there. The wind was blowing like hell. Now is when you should be taking air samples, on an evening like tonight.

Response: We took air samples--actually, the State of New Jersey took air samples--in September. We continually took air samples as part of our health and safety program. Every day we were out there, somebody was taking air samples.

Issue: I'm telling you right now that when a gentle east wind is blowing, my house is not fit to live in. You can't tell me that you're sure that I'm not being polluted from that air coming out of that dump.

Response: There is no immediate threat from the landfill.

Issue: What happens if I die two years from now? You're still going to tell me that there is no immediate threat, right?

Response: From the data we have to date, there is no immediate threat.

Issue: You cannot tell me this for sure.

Response: The hydrogen sulfide and the mercaptans that you smell--and they do smell terrible--are at levels far below anything that is considered harmful. Now I'm not disputing the odor problem, and I know it's downright putrid, but those compounds that cause that odor are not harmful.

Issue: I am not talking about just the methane. I'm talking about other things that went into that dump that I've seen.

Response: The other chemicals that we are finding have been detected in low parts per billion on site. Most of the industrial standards for those chemicals are in parts per million, generally thousands of times greater. And those levels (that we detected) disperse rapidly as you get farther away from the site. There is still a risk associated with those chemicals being emitted and that risk was evaluated in the study.

As part of the remediation plan, there will be gas collection and venting. The gas will be destroyed. The threshold limit values for those parameters, as we stated earlier, are a thousand times higher than the concentrations that we measured while we were right on the landfill. And those threshold limit values are established for a continuous concentration (that's a thousand times higher than we measured) for an eight hour period everyday that you're in the working place. And what is happening on the landfill is that we have a measured concentration a thousand times less than the threshold limit value with no continuous concentration because of the change in wind direction, velocity, and so forth. There is no immediate threat.

Issue: You're telling me that there is no danger from the air in the outer landfill?

Response: Off of the landfill there is an increased risk from the gases coming out of the landfill.

Topic: Technical Considerations

Issue: Has there been any thought given concerning the feasibility of recovering the methane?

Response: It has been considered but we did not really evaluate it, primarily because our initial concern is to gather it and destroy the hazardous chemicals. However, we will reconsider the possibility of recovering the gas.

Issue: Do you have any idea regarding the possibility or danger of additional seepage of contaminants into the groundwater during the 30 years of this project?

Response: We first have to actually choose the alternative. There is the potential for contaminants to migrate into the groundwater which flows underground. However, an aquitard, which we talked about earlier, slows everything down; it takes a number of years for water to get through. We are talking a number of years down the road for the potential for this to happen - that is, before we might possibly detect contamination in our monitoring wells on the other side of Edwards Run. We would not anticipate any vast amount of contamination coming out of the landfill or any offsite migration in the groundwater after implementation of the proposed remedy.

Issue: Is the Kramer Landfill still ranked #3 in the nation?

Response: The ranking does not change after the study. We do not rerank the sites afterwards. A ranking of 3 does not mean that this site is the third worst site in the country. It means that on the forms and on the criteria that we used to evaluate the site, it scored relative to the others at the top. The criteria used are based on potential. The original potential at this site was for contamination of municipal wells over a mile away. That's the extent to which we evaluate the potential hazard of each site in order to get them ranked. Where it's located on the list doesn't matter for funding. EPA's perspective is that if it's on the list, it is eligible for CERCLA funding. People have used the ranking as an attempt to show toxicity. It is not meant to do that. It is an evaluation of a potential problem and is based on the amount of hazardous waste suspected of being there. The fact that it's on the list is all that really matters.

Issue: What you have found is, by some stupid quirk of luck, a landfill located in what you are calling a safe area. Your study indicates that it is not going to go anywhere, that the fumes aren't going to hurt anybody, and that it is not going to damage the water supply or environment.

Response: We didn't say it was not capable of moving. We said that the rate at which it would move would be extremely slow. The EPA is concerned with both public health and the environment. The public health potential risks from this site are considered low relative to other sites. The environmental damage caused by the site is substantial. This plan will protect both the public health and the environment. There is a danger for somebody to go on that site and it is mainly a physical hazard. As far as the air emissions are concerned, they can change. The one's we do have indicate that there is a potential threat from a constant/lifelong exposure to those chemicals. That tells us that we should evaluate the potential risk associated down the road. First, though, let's evaluate it. The risk is not acute; it is long-term chronic.

Issue: You say public health. Are you going to include the people in a public health study? You should start studying the people now to see if there are any changes between now and the future.

Response: We found nothing to indicate any immediate hazard that would require a study. There is nothing to study. Are you asking why shouldn't we be taking studies of the people to see if there is an effect on them? The answer is because we are going to be remediating the site and eliminating the current contaminant pathways of exposure.

Issue: You say you are going to, but that landfill can sit there and that's a chance we take. You don't know how it is really going to affect us.

Response: The only pathways of exposure to the residents are through the leachate that's coming out of the landfill and into Edward's Run, and through the air. All of the remedial plans that are being evaluated are going to stop the migration of any of these contaminants through those pathways. There will not be exposure in the future, when we implement one of these plans.

Topic: Administrative Issues

Issue: With regard to the public comment period, will your decision be made then (when it's over) or in a year or so?

Response: The problem is with our treatability study. The type of treatment system we will use is not known at this time. We're going to study the type of treatment system we will use. That will be a slow decision, but we really don't need to know for a few more months. We anticipate making a decision on the selected alternative in early September. The public comment period closes August 12 and we will evaluate all of the comments from the public, the State of New Jersey Department of Environmental Protection, the county, and our own internal comments. It really depends on what the comments are as to what we decide for the site.

Issue: Are you telling me that after this one-half million dollar study, you are going to depend on comments from me and the audience here on how you should do this thing?

Response: We would use your comments in guiding us in our decision. We will also be receiving our consultant's recommendation. The purpose in coming to the public is not because we don't know anything. It is in case we missed anything. Your concerns are important to us, and this provides you with an opportunity to participate in the Superfund program.

Issue: Do you have an alternative that you prefer over the others?

Response: We are leaning toward certain alternatives. Tentatively, we are leaning toward capping the site and installing a pumping and collection/treatment system. We are strongly considering an upgradient slurry wall as well.

I think something that has not been brought up here is that none of the recommended alternatives are going to be a quick-fix solution. This pumping and collection/treatment system that we are proposing may go on for as many as 30 years.

Issue: Can't we have the consultant's recommendation--now? Could he tell us, please, what it is?

Response: His recommendation is listed in the back of the fact sheet. The recommendation includes the cap (of the landfill), the groundwater pumping and collection system, and the dewatering/excavation of the lagoon.

Because we do not have the treatability study complete yet, we do not know at this time, on a cost basis, whether the clay in a cap would be more feasible to keep the water from flowing down through the fill or an upgradient slurry wall, which would keep water from flowing under the fill. Since we are still studying all the information that we are obtaining, we do not know quite how to cost the alternative or choose one as a remedy. We're really not in a position yet to say or recommend that "yes," we need clay in the cap in order to keep the leachate generation down or that we need the wall. We're close (to selecting an alternative), and we are working on it. The treatability study is ongoing; we're taking a look at some other considerations and will be determining in the near future the remedy for this site.

Issue: When would one of the plans be accomplished. How many years before its done?

Response: The next step is design, and that design will actually give us the construction schedule. Right now, we're assuming it is a 12-month design period, so we're talking roughly a year until construction gets going.

Issue: So you have no cost evaluations?

Response: Yes, we have estimated the capital costs, but we don't have an implementation schedule because we haven't actually completed a design of the alternative.

Issue: So it will take you a year to design it. Out of the air, approximately how long would it take to incorporate this design into the grant?

Response: This is a 66-acre landfill. There is going to be a lot of earth moving to cover that area with clay. I don't think that it is unlikely that just putting the clay cover on it will be a 2-year construction project.

Issue: And that's the end of the project when you put the clay cover on.

Response: Not so. There will be an ongoing treatment system also, for the leachate. As we put the cap on, you will notice the lowering of the odors.

Issue: You said that it will be a year before the design is completed, and approximately two years to cap it with clay. Will the remediation of the site begin right after the design is completed.

Response: I think a 12-month design period is a little on the long side. A 9 - 12 month time frame is reasonable. That will probably include the advertising period and the start of the construction. I think a year's estimate until the start of construction is reasonable.

Issue: This study, which cost one-half million dollars and it is only one study, is paid for out of the taxpayer's money, right?

Response: Yes, it is.

Issue: Can we get an accounting of this half-million dollars? Did we actually spend a half-million dollars on this study.

Response: It is more than that amount.

Issue: Does anybody have an accounting of how this money was spent?

Response: We do keep records and eventually, in the near future, an audit will be done. The outcome of that audit is public information; every project gets audited.

Issue: But does the public ever see these?

Response: They don't, as a matter of course, mail out the audit as they did with the report. You would primarily have to request it.

Issue: Will any of our elected officials see this?

Response: Could you clarify what your concern is?

Issue: You were here a year ago in this same hall. A year later and a half million dollars later you don't know a damn thing more than we knew a year ago.

Response: We know a great deal more. We've done a lot of tests. We know a lot more about the hydrogeology, and we have a recommended plan of where we are going.

Issue: I expected you to tell me just exactly how you were going to clean up this place.

Response: We're here to ask you what you want us to do.

Issue: I would like to see the landfill covered. I'll tell you why. I have a farm there that is worth absolutely nothing with this landfill the way it is right now. I want to sell this farm and nobody will begin to look at it with the landfill nearby.

Response: The site will be capped.

Issue: You're so sure you'll get funding for this? The last I heard, it was all tied up in red tape.

Response: This is the last year of the 5 years of Superfund. It is the authority of Congress to tax for and appropriate more money. The current law expires in October. Actually there are several bills in Congress being debated right now.

Topic: Legal Issues

Issue: Tell me this. Is there a State law which governs closing a landfill? Does that State law say that within a certain time that landfill has to be covered?

Response: Yes.

Issue: Okay, and how do you guys get around this?

Response: We're not responsible for the landfill. There are closure requirements under the State law. But it's not our site yet. The Kramer's would be the responsible people under that law to close the site.

Issue: And how are they getting away with that?

Response: They are essentially broke. They do not have the capability to do it. Helen Kramer herself has declared bankruptcy.

Issue: Mrs. Kramer told me that she has money in an escrow account that she paid to somebody during the life of the landfill. How much money is there and where is it?

Response: My name is Dave Paley and I'm with the New Jersey Department of Environmental Protection. I'm allowed to give an answer. I visited with the Kramers at the end of last summer, and Joe

Kramer was asking me about his escrow account. He remembered something between the order of $30,000 or $40,000 in escrow. And he said, "Whatever happened to my money?" I didn't know anything about it and I said if he could give me any clue as to who he was dealing with--what agency, what branch of the government, or even a name--what person--that I would do whatever I could to track it down. He said he would get it for me. I called the Kramers twice, at intervals of a month after that and said I'm waiting to hear about the information. And I never heard from him. And I don't know where to look for it. If I do get some information, some help from them, I will pursue it to the extent possible.

Our capping alternative runs into the millions of dollars, so even with that fund of the Kramer's, you are only talking about a very small percentage of the total costs.

Issue: Somebody's breaking the State law that says this landfill has to be covered.

Response: I would say the owner but I can't speak as a legal counsel. It appears that they are in violation of the closure regulation under the State Solid Waste Disposal Law.

Issue: Is there anybody here from the State from that department?

Response: Dave Paley is with the Superfund program department, not with the solid waste department.

Issue: Dave, how can they break this law?

Response: The Kramers, as the owners of the landfill, are responsible for a host of problems caused by the landfill. Closure of the landfill is among the requirements under the law that they are in violation of. The penalty is fines. They don't have the money to pay them.

The government is going to spend a lot of money to clean up the site. There will come a point in time, I'm sure, when we will recover some of the costs. We are still looking for the responsible parties, beyond the Kramers, to the generators who generated this waste. The U.S. Justice Department is going to look carefully to find any hidden pockets of money and also to identify who the generators are so as to recover the monies expended by the government. That's the best we can do.

Issue: During this course of operations of the landfill, didn't anybody have any idea that these violations were taking place?

Response: Yes. There were numerous notices of prosecution, notices of registration revocation--all of these ended up in administrative court. Everyone is innocent until proven guilty, so they were allowed to continue to operate until the court injunction, which wasn't issued until 1981.

Issue: Aren't there records available as to who these customers were as generators?

Response: We were not able to obtain any records from the Kramers. Records that the State has are almost entirely with the municipalities in the area.

Issue: When you say that you could not get any records from the Kramers, do the records in fact exist, or are there any indications that they destroyed them?

Response: There is no indication that they made a concerted effort to destroy them.

Issue: Are they still in the Kramer's possession then?

Response: They may or may not be.

Issue: Has there been any legal action to get them? Have you sought them?

Response: We're on the remedial side of the EPA. We have an enforcement section that addresses these types of concerns.

In addition to the oral comments received at the public meeting on August 1, 1985, the EPA also received one written comment based upon an editorial that appeared in a local newspaper.

Issue: The EPA is delaying the initiation of cleanup at the Helen Kramer Landfill until 1988 for politically motivated reasons.

Response: The EPA is not delaying the initiation of cleanup at the Helen Kramer Landfill until 1988. The design of the selected remedial alternative should be initiated within the next few months if funding becomes available. The design is estimated to take approximately 12 months and actual construction of the alternative could take 24 months. We currently estimate that the construction will be completed in 1988 and not initiated in 1988, as was reported in the article.

Times Editorial

Dump cleanup delay taints EPA motives

There are at least 30 reasons why the U.S. Environmental Protection Agency should not wait until 1988 to start cleaning up the Kramer Landfill in Mantua Township.

An EPA consultant at a local meeting on the project last week outlined them himself.

"In the leachate discharging into Edwards Run, there are over 30 identified organic compounds," said the consultant, Richard E. Wright, explaining that contaminated runoff from the former trash dumpsite is spilling into a nearby creek. "Those compounds are believed to be carcinogenic or cause birth defects," he said.

The 30 chemicals, and the 66-acre site's susceptibility to underground fires, are the reasons why the EPA has ranked the site as fourth most dangerous among the 400-plus toxic waste sites nationally that qualify for cleanups with the federal Superfund. The number one site — Lipari Landfill — is also in Mantua Township.

EPA officials say there has been no effect on local drinking water from the Kramer site. Yet such statements offer little comfort to people who live around the landfill, who have shallow wells, and who know that cancer-causing chemicals in surface water are also a health concern.

The EPA has proposed a $30 to $40 million program that would at first prevent the contaminated liquid from spreading beyond the landfill's borders. That is the same thing the agency has done at Lipari in a beneficial, but incomplete, project that has not yet removed or treated any of the toxic waste.

Early last year, EPA officials predicted that it would be 1985 before any cleanup work would take place at the Kramer site. That was reasonable at the time, since studies were just being started and the full extent of chemical contamination in the landfill had become known only the previous year.

The demands on the Superfund, which itself faces a battle for renewal in Congress at an adequate funding level, are numerous. And the state's increased sources of revenue to address hazardous waste problems also are not sufficient to clean up everything, immediately.

But by deciding now to delay cleanup work at Kramer until 1988, the EPA is showing contempt for residents of Mantua, who have had to live with two of the worst toxic time bombs in the country for three decades.

Perhaps the decision is a political one based on the notion that New Jersey and Gloucester County — with Lipari, Kramer and the Bridgeport Rental and Oil Services lagoon in Logan Township — is receiving too large a share of the Superfund too soon. If so, it isn't fair. Kramer is ranked fourth on the Superfund list because of what it is, not where it is.

The EPA should reconsider the proposed cleanup schedule. And state, county and local officials should push to have it accelerated.